

Spectrum™ Technology Platform
Version 9.0

SAP Module User's Guide

Contents

Chapter 1: Introduction to the SAP Module.....	5
What is the SAP Module?.....	6
SAP Module Components.....	6
SAP Module Databases.....	6
 Chapter 2: Using the SAP Interface.....	 11
Locating Records.....	12
Address Validation.....	13
Validating an Address.....	13
Validating an Address with Multiple Matches.....	14
Validating Address Components.....	15
Processing an Invalid Address.....	17
Performing Batch Address Validation.....	18
Business Partner Record Deduplication.....	19
Merging Business Partner Records.....	19
Batch Merging Business Partner Records.....	21
Batch De-duplication.....	22
Viewing the Log.....	23
Resynchronizing the Index Pool.....	25
Initializing Search Key.....	25
Error Handling.....	27
 Chapter 3: Using SAP Dynpro.....	 29
Introduction.....	30
Business Partners.....	31
Creating a Business Partner - Person.....	31
Creating a Business Partner - Organization.....	34
Creating a Business Partner - Group.....	37
Viewing and Modifying a Business Partner.....	41
Searching for a Business Partner.....	41
Customers.....	41
Creating a Customer - General.....	41
Creating a Customer - Consumer.....	44
Viewing and Modifying a Customer.....	46

Searching for a Customer.....	47
Vendor.....	47
Creating a Vendor.....	47
Viewing and Modifying a Vendor.....	49
Searching for a Vendor.....	50
Searching for an Address with Advanced Search.....	50
 Chapter 4: Using the SAP ICWC.....	 53
Querying.....	54
Creating Business Partner Account.....	55
Modifying Business Partner Account.....	56
Validating an Address.....	56
Data De-duplication.....	58
Error Handling.....	59
 Chapter 5: Component Reference.....	 61
SAP Batch Assign GeoTAX Info.....	62
SAP Batch Validate Address.....	62
SAP Generate CASS Report.....	62
SAP Generate Match Key.....	62
SAP Generate Match Score.....	62
SAP Generate Search Key.....	63
SAP Generate Search Key Consonant.....	63
SAP Generate Search Key Metaphone.....	63
SAP Generate Search Key Substring.....	63
SAP Validate Address and Assign GeoTAX Info.....	63
SAP Validate Address With Candidates.....	63
 Appendix A: Country ISO Codes and Module Support.....	 65
Country ISO Codes and Module Support.....	66

Introduction to the SAP Module

In this section:

- What is the SAP Module?6
- SAP Module Components6
- SAP Module Databases6

What is the SAP Module?

Spectrum™ Technology Platform SAP Module optimizes the quality of your customer, vendor and partner records so you can improve operations across the enterprise.

Because SAP is such a far-reaching application, introducing accurate address data provides equally far-reaching benefits. With real-time data quality for over 220 countries, the SAP Module identifies and manages duplicate records, standardizes and validates addresses, auto-populates missing fields, and gives you a single, integrated view of your customers.

SAP Module Components

The SAP Module consists of the following components.

- **SAP Generate CASS Report**—This service reads input data from a file that is located in Spectrum™ Technology Platform installation directory. This file contains input addresses. Each line contains one record and each record contains address information that is separated by tabs.
- **SAP Generate Match Key**—This service is used in generating a match key. The match key is generated using Substring, Metaphone, and Consonant algorithms.
- **SAP Generate Match Score**—This service is used in comparing candidate records and generating a score that reflects its similarity. The higher the score means the closer the match.
- **SAP Generate Search Key**—This service is used in Search Key Generation for All Algorithms. A Search Key is used for Duplicate Detection and Error-Tolerant Searching.
- **SAP Generate Search Key Consonant**—Used in Search Key Generation for Consonant Algorithm. A Search Key is used for Duplicate Detection and Error-Tolerant Searching.
- **SAP Generate Search Key Metaphone**—Used in Search Key Generation for Metaphone Algorithm. A Search Key is used for Duplicate Detection and Error-Tolerant Searching.
- **SAP Generate Search Key Substring**—Used in Search Key Generation for Substring Algorithm. A Search Key is used for Duplicate Detection and Error-Tolerant Searching.
- **SAP Validate Address and Assign GeoTAX Info**—This service accepts address data as input, validates the address against the ValidateAddress, and determines tax jurisdictions for the location using AssignGeoTAXInfo.
- **SAP Validate Address With Candidates**—This service accepts address data as input and validates the address against either the ValidateAddress service or the GetGlobalCandidateAddresses service depending on country of input.

SAP Module Databases

The SAP Module relies on other Spectrum™ Technology Platform modules to provide various capabilities such as address standardization and geocoding. Depending on the features you have licensed you may have one or more of the following modules. Each module requires certain reference data (databases) to be installed on the Spectrum™ Technology Platform server.

Note: For instructions on installing these databases, see the *Spectrum™ Technology Platform Installation Guide*.

Address Now Module Database

The Address Now database contains postal data from all supported countries. You can install the entire database or the data for specific countries only. The database is installed on the server. This database is available by subscription from Pitney Bowes Software and is updated monthly.

Universal Addressing Module Databases

Table 1: Universal Addressing Module Databases

Database Name & Description	Required or Optional	Supplier
<p>U.S. Postal Database</p> <p>The U.S. Postal Database is in a Pitney Bowes proprietary format. It contains every house number range in the United States and is updated on a monthly basis. The database files contain the following information:</p> <ul style="list-style-type: none"> • ZIP + 4[®] Code • Standardized address elements • City and state information <p>The U.S. Postal Database also contains the data needed to perform Enhanced Street Matching (ESM) and All Street Matching (ASM). ESM and ASM apply extra matching logic to any input address that is not matched through the regular address validation process.</p>	Required for U.S. address processing	Pitney Bowes Software monthly subscription
<p>Canadian Postal Database</p> <p>The Canadian Postal database is in Pitney Bowes Software proprietary format. The database files contain the following information:</p> <ul style="list-style-type: none"> • Postal code • Standardized address elements • Municipality and province information 	Required for Canadian address processing	Pitney Bowes Software monthly subscription
<p>Australia Post Postal Address File Database</p> <p>The Postal Address File is part of Australia Post's Address Matching Approval System (AMAS) program. The database file contains the following information:</p> <ul style="list-style-type: none"> • Postal code • Standardized address elements 	Required for Australian address processing	Pitney Bowes Software monthly subscription
<p>International Postal Database</p> <p>The International Postal Database is a collection of postal address data from around the world. Data from each country is categorized according to the level of data available. The categories are:</p> <ul style="list-style-type: none"> • Category A—Enables the validation and correction of an address's postal code, city name, state/county name, street address elements, and country name. • Category B—Enables the validation and correction of an address's postal code, city name, state/county name, and country name. It does not support the validation or correction of street address elements. • Category C—Enables the validation and correction of the country name, and the validation of the format of the postal code. 	Required for International address processing	Pitney Bowes Software quarterly subscription

Database Name & Description	Required or Optional	Supplier
<p>DPV® Database</p> <p>The Delivery Point Validation database allows you to check the validity of an individual mailing address in the U.S. The DPV database enhances the U.S. Postal database's ability to validate mailing addresses.</p> <p>Note: The DPV database also contains the data required for Commercial Mail Receiving Agency (CMRA) processing.</p> <p>Each time an edition of the U.S. Postal database is released, a corresponding edition of the DPV database is released. Although USPS licensing allows the use of the U.S. Postal database beyond the expiration date (with certain restrictions), DPV lookups may not be performed after the expiration date of the DPV database.</p> <p>USPS licensing prohibits using DPV data for the generation of addresses or address lists. To prevent the generation of address lists, the DPV database contains "false positive records." False positive records are artificially manufactured addresses. For each negative response that occurs in a DPV query, a query is made to the False/Positive table in the DPV database. A match to this table will stop DPV processing.</p> <p>USPS licensing also prohibits exporting the DPV data outside the United States.</p>	Optional, but required for CASS Certified™ processing; U.S. addresses only	Pitney Bowes Software monthly subscription
<p>eLOT® Database</p> <p>The Enhanced Line of Travel (eLOT) database is a U.S. address database that ensures that Enhanced Carrier Route mailings are sorted as close as possible to the actual delivery sequence. The eLOT database is required for certain types of postal discounts.</p> <p>You will receive monthly updates to your eLOT database on the same media as the U.S. Postal database.</p> <p>You must install the U.S. Postal database and eLOT database from the same month (i.e., September eLOT data must be processed with a September U.S. Postal database). If the U.S. Postal database and the eLOT database are not from the same month, there may be ZIP + 4® Codes for which eLOT numbers cannot be assigned. The ZIP Code™, ZIP + 4 Code, carrier route code, and the delivery point of an address must be provided to assign a eLOT code.</p>	Optional; U.S. addresses only	Pitney Bowes Software monthly subscription
<p>EWS Database</p> <p>The Early Warning System (EWS) database prevents address validation errors that can result due to a delay in postal data reaching the U.S. Postal database.</p> <p>The EWS database consists of partial address information limited to the ZIP Code™, street name, pre- and post-directionals, and a suffix. For an address record to be</p>	Optional; U.S. addresses only	Download for free from USPS® website

Database Name & Description	Required or Optional	Supplier
<p>EWS-eligible, it must be an address not present on the most recent monthly production U.S. Postal database.</p> <p>The USPS® refreshes the EWS file on a weekly basis (Thursdays). You can download the EWS file from the USPS® website at ribbs.usps.gov.</p> <p>LACS^{Link}® Database</p> <p>The LACS^{Link} database allows you to correct addresses that have changed as a result of a rural route address converting to street-style address, a PO Box renumbering, or a street-style address changing.</p> <p>USPS licensing prohibits using LACS^{Link} for the generation of addresses or address lists. To prevent the generation of address lists, the LACS^{Link} database contains "false positive records." False positive records are artificially manufactured addresses. For each negative response that occurs in a LACS^{Link} query, a query is made to the False/Positive table in the LACS^{Link} database. A match to this table will stop LACS^{Link} processing.</p> <p>USPS licensing also prohibits exporting the LACS^{Link} database outside the United States</p>	Optional, but required for CASS Certified™ processing; U.S. addresses only	Pitney Bowes Software monthly subscription
<p>RDI™ Database</p> <p>The Residential Delivery Indicator (RDI™) database contains data that can help you determine the best cost for shipping your packages.</p> <p>RDI is similar to DPV in that the RDI data is supplied as hash tables. However, RDI is a much simpler process than DPV in that the standard hash algorithm is only determined for the 9-digit and 11-digit ZIP Code™ rather than the entire address.</p>	Optional; U.S. addresses only	License directly from USPS®
<p>Suite^{Link}™ Database</p> <p>Suite^{Link}™ corrects secondary address information for U.S. business addresses whose secondary address information could not be validated. If Suite^{Link} processing is enabled, Validate Address attempts to match the value in the FirmName field to a database of known firm names. Validate Address then supplies the correct secondary address information.</p>	Optional; U.S. addresses only	Pitney Bowes Software monthly subscription

Using the SAP Interface

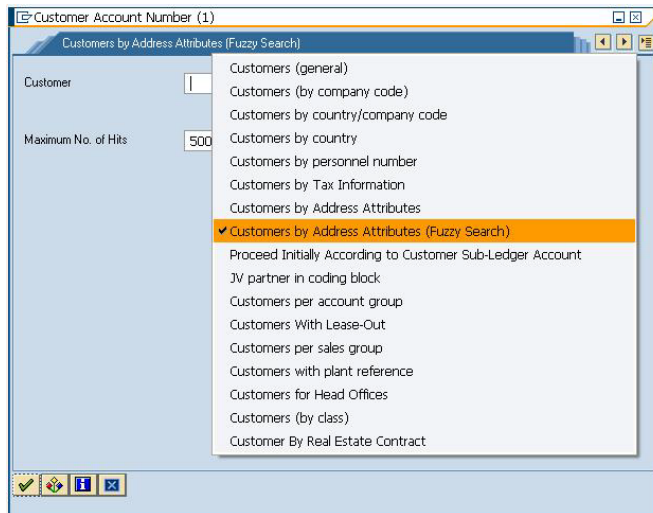
In this section:

- Locating Records12
- Address Validation13
- Business Partner Record Deduplication19
- Viewing the Log23
- Resynchronizing the Index Pool25
- Initializing Search Key25
- Error Handling27

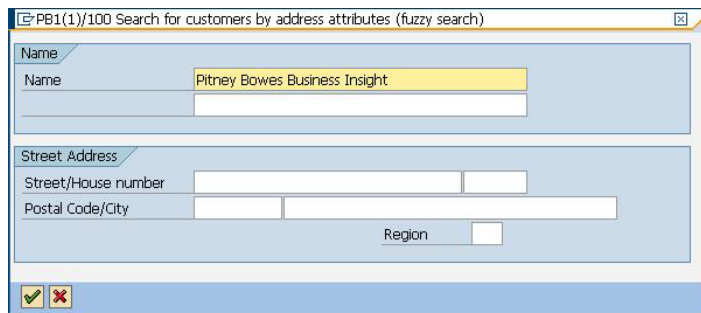
Locating Records

The SAP modules provide various ways in which you can search records. Error-tolerant searches allow you to find customers, vendors, prospects, or business partners, even if you don't have all their information or the information is incomplete or partly wrong.

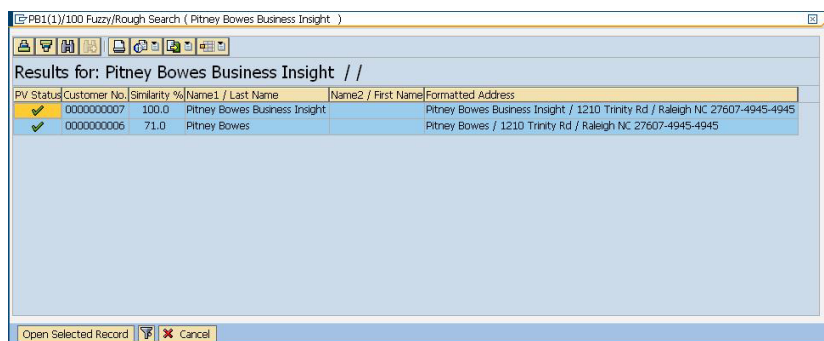
1. When searching for customers, vendors, prospects, or business partners, the error-tolerant search feature allows you to use "Rough" or "Fuzzy" search logic to locate records.



2. Enter any information in any of the fields to perform the error-tolerant search. In this particular case, the information "Pitney Bowes Business Insight" was entered in the name field.



3. Execute the search to display the Results pop-up with a list of possible matches.



4. Select from the given list and click on **Open Selected Record**, or simply click on Cancel to cancel the search.

Address Validation

Address validation is the process of correcting address information and validating addresses against the postal database and is performed on partial or complete records. Address validation is done in several places in the SAP system. Address validation is done whenever address information is created or updated, for example when you create or update a customer record via transaction codes XD01 and/or XD02 or when you create or update a business partner via transaction code BP in SAP CRM.

Validating an Address

1. Enter the address data in SAP.

The example shows the entry 4200 parliament place, lanham, md, us. Notice that the entry is in lower case letters and there is no postal code.

Street Address	
Street/House number	4200 parliament place
Postal Code/City	20706-1852 lanham
Country	us
Region	md

2. Save or check the record. A pop-up confirms that the address validation was performed. In this particular case, the address exists and the validation confirmation pop-up screen appears with the message "Address Validated" displayed at the top.

CR7(1)/100 PBBI SAP DQC - Postal Validation

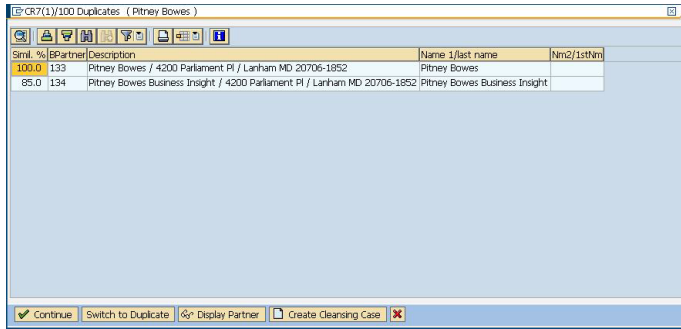
Address Changed

Address Fields	Current Value	Proposed Value
House Number	4200	4200
Street	Parliament Pl	4200 parliament place
City	Lanham	lanham
Region	MD	MD
Postal Code	20706-1852	20706-1852
Country	US	US

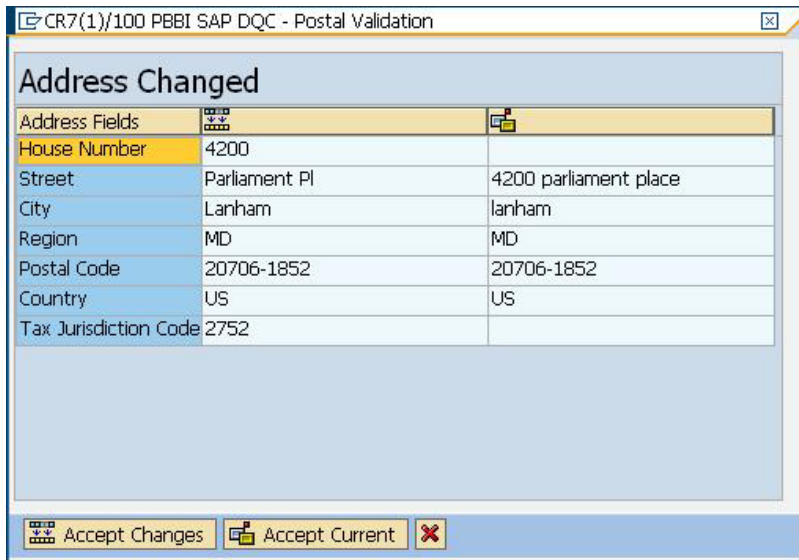
Accept Changes Accept Current X

The validated (cleansed) address is at the **Proposed Value** column and the address that was entered (uncleansed address) is at the **Current Value** column. The cleansed address information has been properly cased and the postal code has been provided.

3. If a record in the system is similar to the record being created, the data deduplication process takes place and the deduplication pop-up is displayed. The data deduplication pop-up displays all the candidate duplicate or duplicates of the record being created.
 - Click **No Duplicate** to ignore any duplicates displayed in the pop-up and create the new record.
 - Click **Select Duplicate** to display the selected candidate duplicate and cancel the creation of the current duplicate.
 - Click the red **X** to cancel the deduplication process.



- If Enterprise Tax is being used and the Tax Jurisdiction Code is required, the Tax Jurisdiction Code is returned with the address.



- Click **Accept Changes** to accept the validated address. Click **Accept Current** to accept the address you entered. Or click the red "X" to cancel the validation.

Validating an Address with Multiple Matches

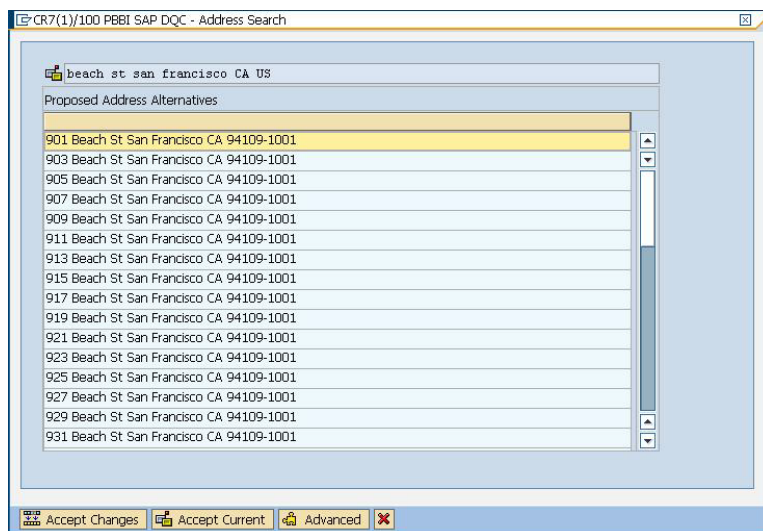
The SAP modules provide two methods for validating addresses that may match multiple candidates.

In the first validation option, when the address entered matches multiple candidates, the SAP modules allow you to select the appropriate matching record from a list of candidates.

Note: When the Simple/Advanced Search option is disabled, no candidate addresses will be suggested.

- Enter the address data in SAP.

The example shows the entry "beach st., san francisco, CA, US.



Since the address contains multiple matches, the address list pop-up is displayed with all candidate addresses.

2. To select a candidate address, highlight it from the list and click the **Accept Changes** button. When you click the **Accept Changes** button, the Postal Validation Pop-up is displayed with the selection you have made.
3. Click the **Accept Changes** button to accept the validated (cleansed) address. Click the **Accept Current** button to accept the address you entered. Or click the red "X" to cancel the validation. Click the **Advanced** button to access the Advanced Search window. For more information on the Advanced Search window refer to [Validating Address Components](#) on page 15.

Note: When there are no candidates, or you choose to click the **Accept Current** button from the Address List Pop-up that displays all possible candidates, the Postal Validation Pop-up does not appear and the original value entered is retained.

Note: When only the Postal Code, Country, and Region fields are populated, the address list does not show any candidate records in the simple tab and an error message is displayed.

Note: If Enterprise Tax is being used and the Tax Jurisdiction Code is required, the addresses in the list will also contain the Tax Jurisdiction Code.

Validating Address Components

The Advanced Search is helpful when there is uncertainty in the address entered. This feature eases the difficulty of entering and searching even the most complex addresses.

The Component Tab contains Proposed and Current columns. Initially, the 'Proposed' column does not contain any value. This is because the values are selected per field.

Note: This option will be available only if the Simple/Advanced Search option is enabled, and the address entered does not produce a unique result.

1. Enter the address data in SAP.
2. The address goes through the validation process. The Advanced Search Tab screen is displayed with blank fields.
3. To begin a search, click Advanced button. The Advanced Search screen is displayed. On this screen, the entered address is not displayed on the Proposed Address column. The address to be searched has to be typed in the fields.
4. Results are only displayed on the Out-Of-Context Alternatives box when entries are found out of the scope of the search criteria.

- To begin a search, enter the address to be searched and click on the binoculars button beside the field for which you want to search. Searches are done on a field-by-field basis only. The results are displayed either on the In-Context Alternatives, or the Out-Of-Context Alternatives.

CR7(1)/100 PBBI SAP DQC - Component Search

beach st san francisco CA US

Search Fields	In-Context Alternatives	Out-of-Context Alternatives
<input type="checkbox"/> New Search	[No Values]	[No Values]
Address Fiel. Search Proposed Address	In-Context Alternatives	Out-of-Context Alternatives
Zip		
City		
State		
County		
Street		
Company		
Building		
Premise-No		
Sub-Building		
PO-Box		
+4		
Country		

*Only a COMPLETED Address will be Accepted

Accept Current

- To commit a field, double-click an entry on the In-Context Alternatives box. Once a field is committed, the system will provide you with a list of possible entries based on what was committed. This list is based on a search hierarchy. The hierarchy is as follows:

- Zip
- City
- State
- Street
- Company
- Building
- Premise-No
- Sub-Building
- PO-Box

Note: When a search is made, and there are no results matching the search criteria, the next field in the hierarchy will be returned with its possible results.

- Continue searching until all fields are complete enough for the address to be considered a complete and valid address.

CR7(1)/100 PBBI SAP DQC - Component Search

beach st san francisco CA US

Search Fields	In-Context Alternatives	Out-of-Context Alternatives
<input type="checkbox"/> New Search	[No Values]	[No Values]
Address Fiel. Search Proposed Address	In-Context Alternatives	Out-of-Context Alternatives
Zip	20706	
City	LANHAM	
State	MD	
County	PRINCE GEORGES	
Street	PARLIAMENT PL	
Company	GROUP 1	
Building		
Premise-No	4200	
Sub-Building	STE 600	
PO-Box		
+4	1844	
Country	US	

*Only a COMPLETED Address will be Accepted

Accept Changes Accept Current

Note: Only a Completed Address will be accepted by the system.

- To make another search, just click the **New Search** button in the advanced search screen.

Note: You can choose a new search provided you have not selected the **Accept Changes** button. Once the **Accept Changes** button has been selected the committed address will be reflected in the create data screen.

- Click the **Accept Changes** button to accept the validated (completed) address. Click the **Accept Current** button to accept the address you entered. Or click the red "X" to cancel the validation.

Processing an Invalid Address

The SAP modules perform data cleansing on all records, complete or partial, so there may be times when the system is unable to cleanse the record using the postal database.

You can process addresses with or without the Simple/Advanced Search option enabled.

- Enter the address data in SAP.

The example shows the entry "000 INVALID STREET, INVALID CITY, MD, US.

- When the address record is saved or checked, this address will go through Address Validation. Since the address does not exist, the Address List pop-up is displayed with the appropriate error message.

- You can either accept the invalid address or cancel the address list pop-up.

Performing Batch Address Validation

Batch address cleansing is the process of updating uncleansed records in a data set. These uncleansed records will pass through the normal data cleansing process which will automatically update records at one time.

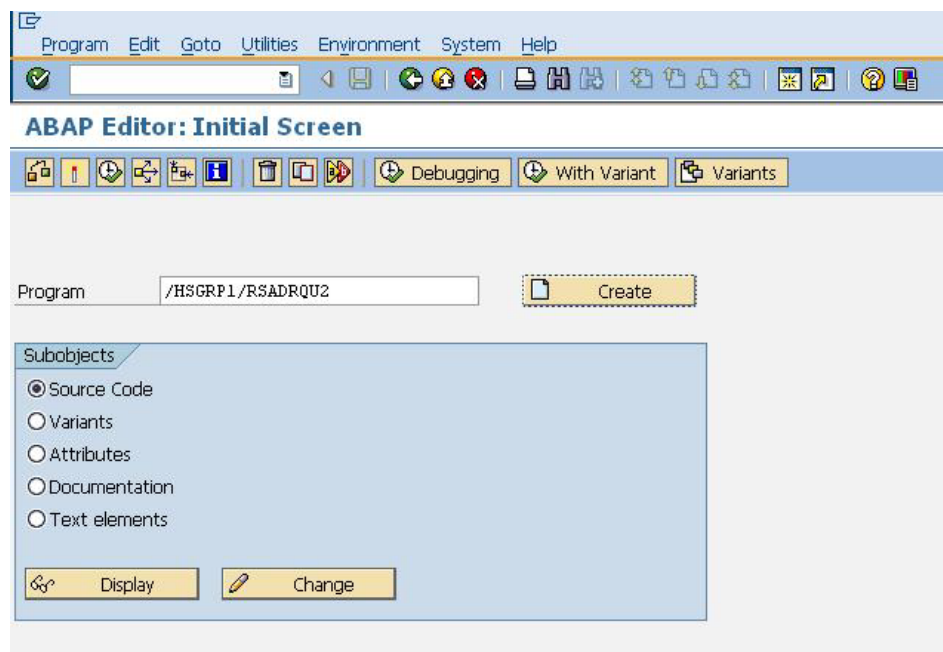
If a record or records in the system has been saved with uncleansed data (e.g. lower cased address), running the batch address cleansing should automatically cleanse these records at the same time.

There are 3 report programs that should be run (in order) to complete this batch process:

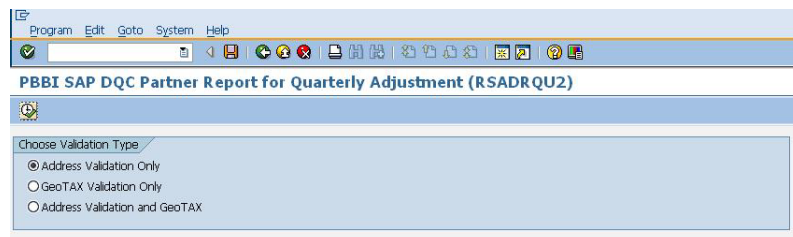
- RSADRQU1
- /HSGRP1/RSADRQU2
- RSADRQU3

The first and last reports are SAP standard programs for the quarterly adjustment process.

1. Navigate to the ABAP Editor: Initial Screen.



2. Click the clock button to run or execute the specified program.
3. The screen below results after running the batch address cleansing.



There are 3 modes available for this process:

- Address Validation - This will only validate and cleanse the records.
- GeoTAX Validation - This will only perform tax jurisdiction assignments on the records.
- Address Validation and GeoTAX - This will validate, cleanse, and perform tax jurisdiction assignments on the records.

The GeoTAX Validation Only and Address Validation and GeoTAX options will only operate properly if the Enterprise Tax module is installed.

Business Partner Record Deduplication

Data deduplication is the process of identifying duplicate records in a data set. The SAP modules allow you to identify duplicates based on a variety of fields. Once duplicate records are found you can then choose to ignore them or create a master record by merging information found in each duplicate.

Merging Business Partner Records

Record Merging is the process of reconciling duplicate records. Duplicate records are reconciled by merging the duplicate to the current record or by merging the current to the duplicate record.

Note: Merging is only available in SAP CRM and SAP ECC.

The Address Master screen provides a view of all SAP Application Objects that have standard addresses. Use this application to merge Business Partner duplicate objects.

In the Address Master initial screen, filter the list according to the address type, status, threshold, and maximum number of hits.

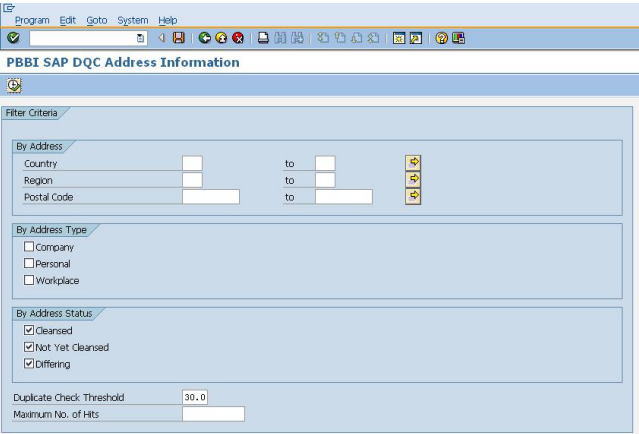


Figure 1: Address Master Initial Screen



Figure 2: Address Type Filters



Figure 3: Status Filters

Figure 4: Address Master Main Screen on page 20 shows the results from Address Master Initial Screen (rows highlighted in yellow are business partner already flagged for archiving).

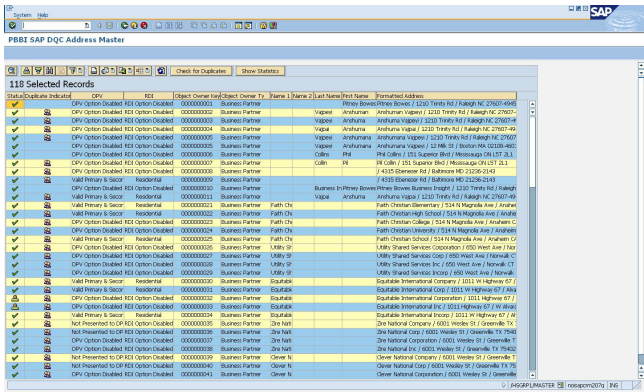


Figure 4: Address Master Main Screen



Figure 5: Duplicate Check Threshold and Maximum No. of Hits Filter

Table 2: Status Icons on page 20 shows the Status icons in the Address Master main screen and their corresponding definition.

Table 2: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

Table 3: Address Master Main Screen Buttons on page 20 shows the buttons seen in the Address Master main screen.

Table 3: Address Master Main Screen Buttons

Button	Function
Check for Duplicates	Displays the candidate duplicate or duplicates of the selected business partner
Show Statistics	Display overall statistics information of the selected addresses in Address Master

Similar to the deduplication pop-up screen that displays during the creation of customers, vendors, or business partners, the duplicate pop-up screen, shown in **Figure 6: Duplicate Pop-up Screen Duplicate Pop-up Screen** on page 21, contains the candidate duplicate or duplicates of the selected record.

Note: In CRM, the deduplication pop-up screen displays with the Merging buttons, as seen in [Table 4: Duplicate Pop-up Screen Buttons](#) on page 21.

Table 4: Duplicate Pop-up Screen Buttons on page 21 shows the Duplicate Pop-up screen buttons, and their corresponding function.

Table 4: Duplicate Pop-up Screen Buttons

Button	Function
Merge Current to Duplicate	Merges the selected record of the Main screen to the selected record of the Pop-up screen
Merge Duplicate to Current	Merges the selected record of the Pop-up screen to the selected record of the Main screen

A confirmation pop-up displays, as shown in [Figure 7: Cleansing Case Created Cleansing Case Created Screen](#) on page 21, displaying clearing case created.

Note: The merging process depends on your merge settings. If Merge Settings is set to Pitney Bowes Business Insight Merge Process, the records are merged automatically. If it is set to SAP Merge Process, only the data cleansing cases are created and the cleansing case process must be done manually to complete the merge.

The Pitney Bowes Business Insight Merge Process automatically merges the two records. Successful merging displays a status message, as shown in [Figure 8: Merge Status Message Merge Status Message](#) on page 21, on the Address Master screen. If SAP Merge Process is set in the Merge Settings, a pop-up displays, as shown in [Figure 7: Cleansing Case Created Cleansing Case Created Screen](#) on page 21, prompting you that the cleansing case was successfully created.

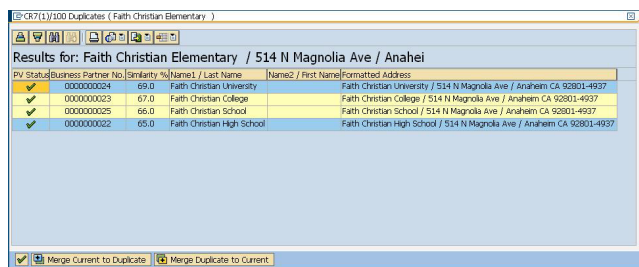


Figure 6: Duplicate Pop-up Screen

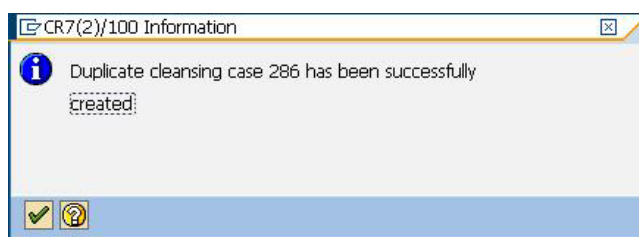


Figure 7: Cleansing Case Created

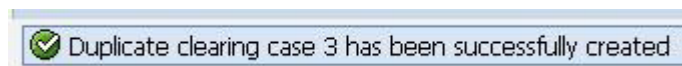


Figure 8: Merge Status Message

Batch Merging Business Partner Records

Batch merge is the process of merging Business Partner candidates with corresponding duplicates. Business Partner candidates flagged for archiving are not included in the process. The merge behavior

depends on whether the Merge Settings are set to Pitney Bowes Business Insight Merge Process or SAP Merge Process.

1. Execute /HSGRP1/BP_MERGING.

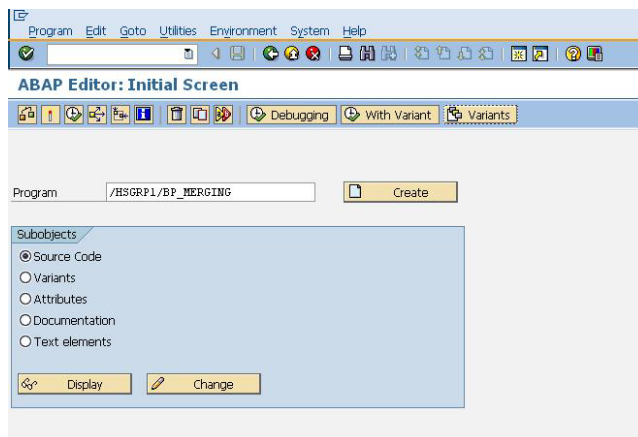


Figure 9: Batch Merge program in SE38

2. Enter the package size and specify whether you want the merged record to be archived.



Figure 10: Batch Merge Initial Screen

3. After executing, a message confirming that batch merging has been completed is displayed.



Figure 11: Batch Merge Report Screen

Batch De-duplication

Batch de-duplication is the process of initializing duplicate status field in the table /HSGRP1/MATCHKEY. Execute /HSGRP1/RSADRDEDUP.

After executing, a message confirming that batch de-duplication has been completed is displayed, as shown in **Figure 14: Batch De-duplication Report Screen Batch De-duplication Report Screen** on page 23.

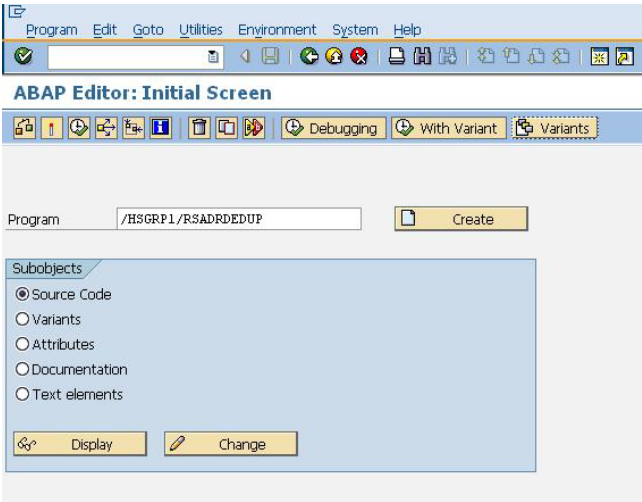


Figure 12: Batch De-duplication Program in SE38

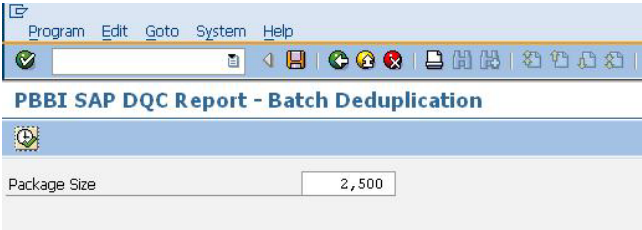


Figure 13: Batch De-duplication Initial Screen



Figure 14: Batch De-duplication Report Screen

Viewing the Log

The SAP Module uses the built-in application log of SAP. To view the log entries, you can enter the transaction SLG1.

Note: /HSGRP1/DQC is the object name to use to view logs specific to the SAP Module.

1. To view the entries of this table, enter the transaction SLG1.

Display logs

```

<?xml version="1.0" encoding="utf-8" ?>
- <message>
- <propertysets>
- <propertyset name="context">
  <property key="account.id" value="guest" />
  <property key="account.password" value="" />
  <property key="service.name" value="SAPGenerateMatchScore" />
</propertyset>
</propertysets>
- <dataset>
- <columns>
  <column name="AddressNumber" />
  <column name="PersonNumber" />
  <column name="Name1" />
  <column name="Name2" />
  <column name="AddressLine1" />
  <column name="HouseNumber" />
  <column name="ApartmentNumber" />
  <column name="City" />
  <column name="StateProvince" />
  <column name="Country" />
  <column name="PostalCode" />
  <column name="Delimiter" />
  <column name="MatchGroup" />
  <column name="Threshold" />
</columns>
- <records>
- <record>
  <field value="0000010610" />
  <field value="0000010609" />
  <field value="" />
  <field value="Pitney Bowes" />
  <field value="Trinity Rd" />
  <field value="1210" />
  <field value="" />
  <field value="Raleigh" />
  <field value="NC" />
  <field value="US" />
  <field value="27607-4945" />
  <field value="" />
  <field value="SAPDQC" />

```

Note: These XML message logs are created depending on the General Behavior settings. In the case where the Host (where the Enterprise Server is installed) cannot be reached, no received XML will be logged.

Resynchronizing the Index Pool

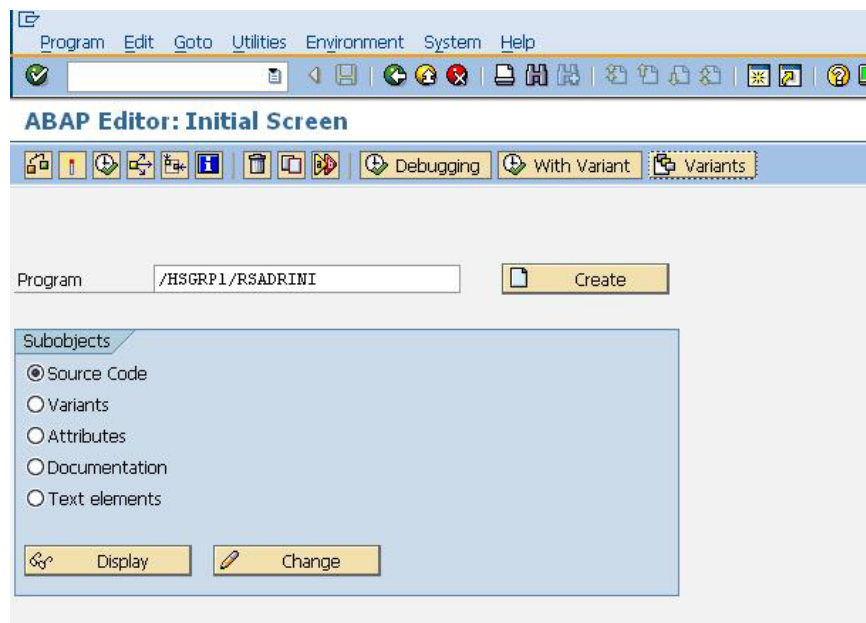
Index Pool Resynchronization is the process of reinitializing the table `/HSGRP1/MATCHKEY`.

- If there are records created during a downtime of some sort, there is a possibility that the search process will not provide complete results. Upon creation, update, or search, automatic resynchronization will take place to update the index. If the number of unsync records exceeds the set threshold, you will be prompted to choose whether to continue the resync process or not.

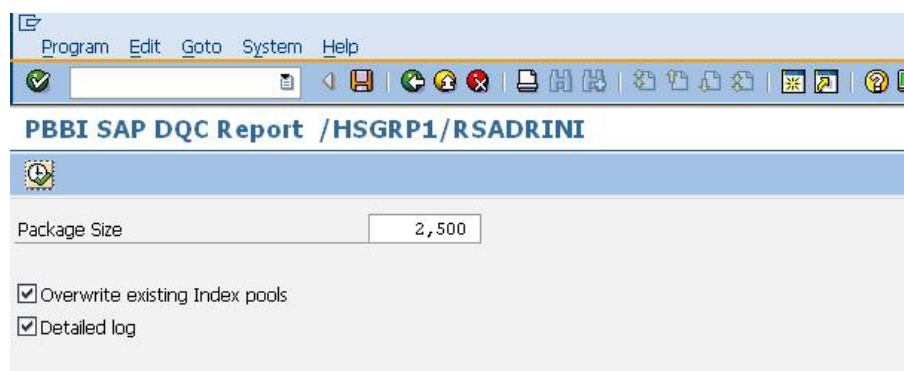
Initializing Search Key

Search Key Initialization is the process of initializing the table `/HSGRP1/MATCHKEY`.

1. Navigate to the ABAP Editor: Initial Screen.



2. Click the clock button to run or execute the specified program. The Pitney Bowes Business Insight SAP DQC Report /HSGRP1/RSADRINI Screen appears.



3. Select the appropriate options to view the Pitney Bowes Business Insight SAP DQC Report /HSGRP1/RSADRINI Screen.

PBBI SAP DQC Report /HSGRP1/RSADRINI	
PBBI SAP DQC Report /HSGRP1/RSADRINI	
Started Matchkey Generation:	24.11.2010 09:14:06
Processing Matchkey Record(s):	147
Ended Matchkey Generation:	24.11.2010 09:14:06
Processing: BUT052, ADDRNUMBER	
Started Extract Index:	24.11.2010 09:14:06
Ended Extract Index:	24.11.2010 09:14:06
Started Matchkey Generation:	24.11.2010 09:14:06
Processing Matchkey Record(s):	0
Ended Matchkey Generation:	24.11.2010 09:14:06
Processing: KNAL, ADRNR	
Started Extract Index:	24.11.2010 09:14:06
Error Processing: KNAL, ADRNR	
Message : TSADRVGRPE KNAL ADRNR	
Ended Extract Index:	24.11.2010 09:14:06
Started Matchkey Generation:	24.11.2010 09:14:06
Processing Matchkey Record(s):	0
Ended Matchkey Generation:	24.11.2010 09:14:06
Total Address Processed:	147
Total Matchkey Generated	147
Index Initialization Finished -> 24.11.2010 09:14:06	

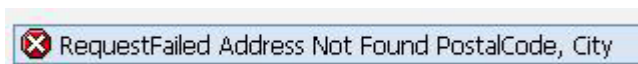
Error Handling

There are two kinds of error messages provided in this system. The first kind would be the standard error messages provided by SAP, which will not be discussed in this document. The second kind would be the error messages provided by the SAP DQC.

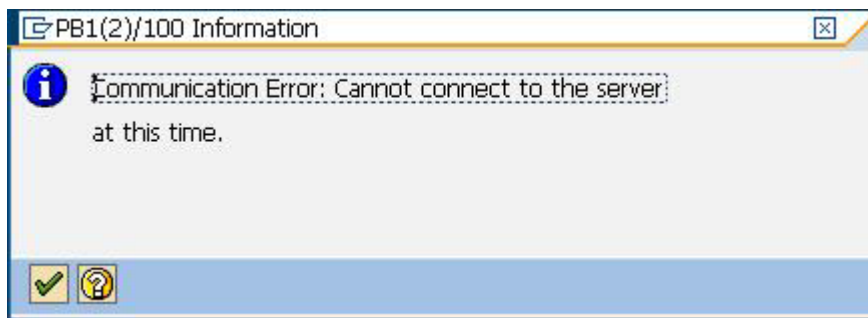
In Data Cleansing for example, if the address entered was 000 INVALID STREET, INVALID CITY, MD, US. the figure below shows how this address entry is made in SAP.

Street Address			
Street/House number	INVALID STREET		000
Postal Code/City	INVALID CITY		
Country	US	Region	MD

Upon Saving or Checking the record, this address will go through Address Validation. A confirmation pop-up prompts the user that the Address Validation was made. In this particular case, the address does not exist, therefore, the appropriate error message is returned. In this pop-up, the error message is displayed.



For other cases such as, the HTTP request timed-out or a connection to the host could not be established; the error message returned by Spectrum™ Technology Platform is displayed in this pop-up.



Using SAP Dynpro

In this section:

- Introduction30
- Business Partners31
- Customers41
- Vendor47
- Searching for an Address with Advanced Search50

Introduction

The Spectrum™ Technology Platform SAP Module improves the quality of your address data by providing the following functions in your SAP Dynpro environment:

- Address Cleansing—correcting address information and validating addresses against a postal database amongst partial or complete records.
- Address Duplicate Detection—identifying duplicate records in a data set for appropriate action.
- Fuzzy/Rough Search—searches for addresses that are already present on the database.
- Advanced Search—creation of new addresses by using interactive value generation and field requirements.

The diagram below shows a typical SAP NetWeaver Portal and system architecture. Note the connection to Spectrum™ Technology Platform to provide address validation.

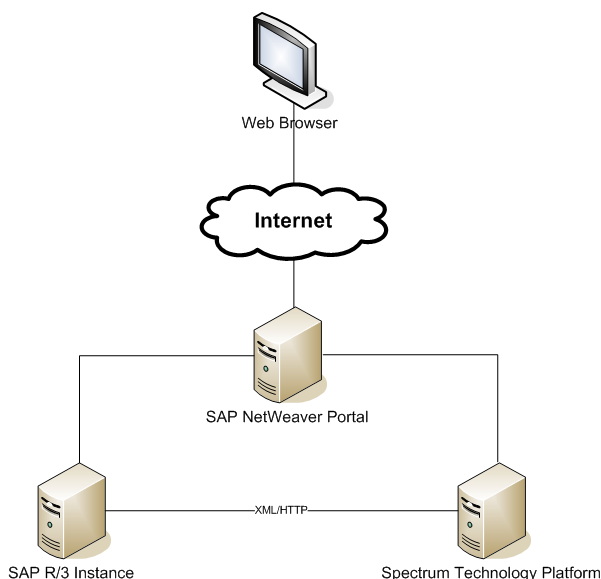


Figure 15: System Architecture

SAP NetWeaver Portal

SAP NetWeaver Portal offers a single point of access to SAP and non-SAP information sources, enterprise applications, information repositories, databases, and services inside and outside your organization through a single user experience.

SAP Server

SAP is an Enterprise Resource Planning (ERP) system. Originally dating back to the 1970s, it took the then-controversial approach of combining various business functions into one application and database. In the 1980s, SAP designed a new architecture for the new system using a multi-tiered Client/Server architecture, with data storage on a database server running some relational database, application code, written in their ABAP/4 language, running on a set of application servers.

Spectrum™ Technology Platform Server

Spectrum™ Technology Platform provides integration for end users to execute services and process data. The server is managed using .NET clients (Management Console, Interactive Driver, and Enterprise Designer). The server itself is written in Java for maximum platform support but can leverage products written in other languages by building Java-based components on top of these other products.

Business Partners

Creating a Business Partner - Person

A Business Partner - Person is a record for an individual person.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Create Business Partner** then click **Person**.
3. Complete the following fields:

Field	Description										
Title	A title of respect or professional title.										
First Name	The person's given name. For example, in the name John Smith, John is the first name.										
Last Name	The person's family name. For example, in the name John Smith, Smith is the last name.										
Street/House Number	The person's street and house or building number. For example, 430 Main St.										
City	The municipality name.										
Postal Code	The postal code for the address.										
Country	The country for the address.										
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.										
Tax Jurisdiction	The proprietary codes used in ADP/Taxware tax compliance software. You can use this code in your ADP/Taxware application to find out the tax rate for the jurisdiction.										
PO Box	A post office box number.										
PO w/o number	Check this box if you leave the PO Box field blank.										
Postal Code	If you are entering a PO Box address, the postal code for the address.										
Latitude	The latitude of the address. The latitude is a seven-digit number in degrees, calculated to six decimal places.										
Longitude	The longitude of the address. The longitude is a seven-digit number in degrees, calculated to six decimal places.										
CMRA	Indicates if the address is a Commercial Mail Receiving Agency (CMRA) <table> <tr> <td>Y</td><td>Yes, the address is a CMRA.</td></tr> <tr> <td>N</td><td>No, the address is not a CMRA.</td></tr> <tr> <td>U</td><td>Unconfirmed.</td></tr> </table>	Y	Yes, the address is a CMRA.	N	No, the address is not a CMRA.	U	Unconfirmed.				
Y	Yes, the address is a CMRA.										
N	No, the address is not a CMRA.										
U	Unconfirmed.										
DPV	Indicates the results of Delivery Point Validation (DPV) processing. <table> <tr> <td>Y</td><td>DPV confirmed.</td></tr> <tr> <td>N</td><td>Address is not deliverable.</td></tr> <tr> <td>S</td><td>The primary number was validated but the secondary number could not be confirmed.</td></tr> <tr> <td>D</td><td>The primary number was validated but the secondary number was missing from input.</td></tr> <tr> <td>M</td><td>The address matches multiple valid delivery points.</td></tr> </table>	Y	DPV confirmed.	N	Address is not deliverable.	S	The primary number was validated but the secondary number could not be confirmed.	D	The primary number was validated but the secondary number was missing from input.	M	The address matches multiple valid delivery points.
Y	DPV confirmed.										
N	Address is not deliverable.										
S	The primary number was validated but the secondary number could not be confirmed.										
D	The primary number was validated but the secondary number was missing from input.										
M	The address matches multiple valid delivery points.										

Field	Description
U	The address could not be confirmed because the address did not code at the ZIP + 4 [®] level.
V	The address caused a false-positive violation.
RDI	Return values indicating address type.
B	The address is a business address.
R	The address is a residential address.
M	The address is both a residential and a business address.
null	Not checked because the address did not code at a ZIP + 4 [®] level, or RDI [™] was not performed.
EWS	The Early Warning System (EWS) uses the USPS [®] EWS File to validate addresses that are not in the ZIP + 4 [®] database. One of the following:
Y	Yes, the address was validated using the EWS file.
N	No, the address was not validated using the EWS file.
Telephone	The phone number for the person. If there is an extension, enter it in the Ext field.
Fax	The fax number for the person. If there is an extension, enter it in the Ext field.
Email	The email for the person.

4. Click **Validate** to validate the address.

- If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

SAP DQC - Postal Validation		
Address changed		
Address Fields		
House Number	50	50
Street	Water St	water st
City	Lee	lee
Region	MA	MA
Postal Code	01238-9008	01238-9008
Country	US	US
Tax Jurisdiction Code	2753	
Latitude		
Longitude		
CMRA	U	
DPV	U	
RDI	R	
EWS		

Row 1 of 13

Accept Changes Accept Current X

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

SAP DQC - Postal Validation

beach st san francisco

Address
901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001
921 Beach St San Francisco CA 94109-1001
923 Beach St San Francisco CA 94109-1001
925 Beach St San Francisco CA 94109-1001
927 Beach St San Francisco CA 94109-1001
929 Beach St San Francisco CA 94109-1001


Row 1 of 50

Accept Changes Accept Current Cancel



- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found.

Address Fields	
House Number	
Street	000 Something Road
City	New York
Region	CA
Postal Code	
Country	US
Tax Jurisdiction Code	

Row 1 of 7

 Accept Current  Cancel





- To use the validated address in the business partner you are creating, click **Accept Changes**.
5. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.

If one or more duplicate records are found, the following window is displayed:

[illegible]

The PV column (Postal Validation) indicates whether the address has been validated. The icons in the column are described in the following table.

Table 5: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

- To continue with saving the new business partner and ignore the duplicates, click **Continue**.
 - To view the selected duplicate and cancel the creation of the new business partner, click **Switch to Duplicate**.
 - To view the selected duplicate in a new popup window, click **Display Partner**.
 - To return to the new business partner without taking any action on the duplicates, click **Cancel**.
6. After you have validated the address and checked for duplicates, click **Save**.

Creating a Business Partner - Organization

A Business Partner - Organization is a record for a company or other entity.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Create Business Partner** then click **Organization**.
3. Complete the following fields:

Field	Description
Title	Select Company .
Name	The name of the company or organization.
Street/House No.	The organization's street and house or building number. For example, 430 Main St.
City	The municipality name.
Postal Code	The postal code for the address.
Country	The country for the address.
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.
Tax Jurisdiction	The proprietary codes used in ADP/Taxware tax compliance software. You can use this code in your ADP/Taxware application to find out the tax rate for the jurisdiction.
PO Box	A post office box number.
PO w/o number	Check this box if you leave the PO Box field blank.
Postal Code	If you are entering a PO Box address, the postal code for the address.
Latitude	The latitude of the address. The latitude is a seven-digit number in degrees, calculated to six decimal places.

Field	Description
Longitude	The longitude of the address. The longitude is a seven-digit number in degrees, calculated to six decimal places.
CMRA	Indicates if the address is a Commercial Mail Receiving Agency (CMRA)
Y	Yes, the address is a CMRA.
N	No, the address is not a CMRA.
U	Unconfirmed.
DPV	Indicates the results of Delivery Point Validation (DPV) processing.
Y	DPV confirmed.
N	Address is not deliverable.
S	The primary number was validated but the secondary number could not be confirmed.
D	The primary number was validated but the secondary number was missing from input.
M	The address matches multiple valid delivery points.
U	The address could not be confirmed because the address did not code at the ZIP + 4 [®] level.
V	The address caused a false-positive violation.
RDI	Return values indicating address type.
B	The address is a business address.
R	The address is a residential address.
M	The address is both a residential and a business address.
null	Not checked because the address did not code at a ZIP + 4 [®] level, or RDI [™] was not performed.
EWS	The Early Warning System (EWS) uses the USPS [®] EWS File to validate addresses that are not in the ZIP + 4 [®] database. One of the following:
Y	Yes, the address was validated using the EWS file.
N	No, the address was not validated using the EWS file.
Telephone	The phone number for the organization. If there is an extension, enter it in the Ext field.
Fax	The fax number for the organization. If there is an extension, enter it in the Ext field.
Email	The email for the organization.

4. Click **Validate** to validate the address.

- If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

SAP DQC - Postal Validation

Address changed

Address Fields		
House Number	50	50
Street	Water St	water st
City	Lee	lee
Region	MA	MA
Postal Code	01238-9008	01238-9008
Country	US	US
Tax Jurisdiction Code	2753	
Latitude		
Longitude		
CMRA	U	
DPV	U	
RDI	R	
EWS		

Row 1 of 13

Accept Changes Accept Current X

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

SAP DQC - Postal Validation

beach st san francisco

Address
901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001
921 Beach St San Francisco CA 94109-1001
923 Beach St San Francisco CA 94109-1001
925 Beach St San Francisco CA 94109-1001
927 Beach St San Francisco CA 94109-1001
929 Beach St San Francisco CA 94109-1001

Row 1 of 50

Accept Changes Accept Current Cancel

- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found.

Address Fields	
House Number	
Street	000 Something Road
City	New York
Region	CA
Postal Code	
Country	US
Tax Jurisdiction Code	

Row 1 of 7

Accept Current Cancel

- To use the validated address in the business partner you are creating, click **Accept Changes**.
5. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.

Field	Description														
Name 1	The name of one of the individuals in the group.														
Name 2	The name of one of the individuals in the group.														
Street/House No.	The organization's street and house or building number. For example, 430 Main St.														
City	The municipality name.														
Postal Code	The postal code for the address.														
Country	The country for the address.														
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.														
Tax Jurisdiction	The proprietary codes used in ADP/Taxware tax compliance software. You can use this code in your ADP/Taxware application to find out the tax rate for the jurisdiction.														
PO Box	A post office box number.														
PO w/o number	Check this box if you leave the PO Box field blank.														
Postal Code	If you are entering a PO Box address, the postal code for the address.														
Latitude	The latitude of the address. The latitude is a seven-digit number in degrees, calculated to six decimal places.														
Longitude	The longitude of the address. The longitude is a seven-digit number in degrees, calculated to six decimal places.														
CMRA	Indicates if the address is a Commercial Mail Receiving Agency (CMRA) <table> <tr> <td>Y</td><td>Yes, the address is a CMRA.</td></tr> <tr> <td>N</td><td>No, the address is not a CMRA.</td></tr> <tr> <td>U</td><td>Unconfirmed.</td></tr> </table>	Y	Yes, the address is a CMRA.	N	No, the address is not a CMRA.	U	Unconfirmed.								
Y	Yes, the address is a CMRA.														
N	No, the address is not a CMRA.														
U	Unconfirmed.														
DPV	Indicates the results of Delivery Point Validation (DPV) processing. <table> <tr> <td>Y</td><td>DPV confirmed.</td></tr> <tr> <td>N</td><td>Address is not deliverable.</td></tr> <tr> <td>S</td><td>The primary number was validated but the secondary number could not be confirmed.</td></tr> <tr> <td>D</td><td>The primary number was validated but the secondary number was missing from input.</td></tr> <tr> <td>M</td><td>The address matches multiple valid delivery points.</td></tr> <tr> <td>U</td><td>The address could not be confirmed because the address did not code at the ZIP + 4[®] level.</td></tr> <tr> <td>V</td><td>The address caused a false-positive violation.</td></tr> </table>	Y	DPV confirmed.	N	Address is not deliverable.	S	The primary number was validated but the secondary number could not be confirmed.	D	The primary number was validated but the secondary number was missing from input.	M	The address matches multiple valid delivery points.	U	The address could not be confirmed because the address did not code at the ZIP + 4 [®] level.	V	The address caused a false-positive violation.
Y	DPV confirmed.														
N	Address is not deliverable.														
S	The primary number was validated but the secondary number could not be confirmed.														
D	The primary number was validated but the secondary number was missing from input.														
M	The address matches multiple valid delivery points.														
U	The address could not be confirmed because the address did not code at the ZIP + 4 [®] level.														
V	The address caused a false-positive violation.														
RDI	Return values indicating address type. <table> <tr> <td>B</td><td>The address is a business address.</td></tr> <tr> <td>R</td><td>The address is a residential address.</td></tr> <tr> <td>M</td><td>The address is both a residential and a business address.</td></tr> <tr> <td>null</td><td>Not checked because the address did not code at a ZIP + 4[®] level, or RDI[™] was not performed.</td></tr> </table>	B	The address is a business address.	R	The address is a residential address.	M	The address is both a residential and a business address.	null	Not checked because the address did not code at a ZIP + 4 [®] level, or RDI [™] was not performed.						
B	The address is a business address.														
R	The address is a residential address.														
M	The address is both a residential and a business address.														
null	Not checked because the address did not code at a ZIP + 4 [®] level, or RDI [™] was not performed.														
EWS	The Early Warning System (EWS) uses the USPS [®] EWS File to validate addresses that are not in the ZIP + 4 [®] database. One of the following: <table> <tr> <td>Y</td><td>Yes, the address was validated using the EWS file.</td></tr> </table>	Y	Yes, the address was validated using the EWS file.												
Y	Yes, the address was validated using the EWS file.														

Field	Description
	N No, the address was not validated using the EWS file.
Telephone	The phone number for the organization. If there is an extension, enter it in the Ext field.
Fax	The fax number for the organization. If there is an extension, enter it in the Ext field.
Email	The email for the organization.

4. Click **Validate** to validate the address.

- If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

The screenshot shows the 'SAP DQC - Postal Validation' window with the 'Address changed' tab selected. It displays a table with address fields and their validated values. The 'House Number' field is highlighted in orange.

Address Fields		
House Number	50	50
Street	Water St	water st
City	Lee	lee
Region	MA	MA
Postal Code	01238-9008	01238-9008
Country	US	US
Tax Jurisdiction Code	2753	
Latitude		
Longitude		
CMRA	U	
DPV	U	
RDI	R	
EWS		

At the bottom, there are navigation buttons: 'Accept Changes', 'Accept Current', and a close button (X). The status bar indicates 'Row 1 of 13'.

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

The screenshot shows the 'SAP DQC - Postal Validation' window with the 'Address List' pop-up displayed. It shows a list of addresses matching the input 'beach st san francisco'. The first address is highlighted in orange.

Address
901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001
921 Beach St San Francisco CA 94109-1001
923 Beach St San Francisco CA 94109-1001
925 Beach St San Francisco CA 94109-1001
927 Beach St San Francisco CA 94109-1001
929 Beach St San Francisco CA 94109-1001

At the bottom, there are navigation buttons: 'Accept Changes', 'Accept Current', and 'Cancel'. The status bar indicates 'Row 1 of 50'.

- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found.

Address Fields	
House Number	
Street	000 Something Road
City	New York
Region	CA
Postal Code	
Country	US
Tax Jurisdiction Code	

Row 1 of 7

- To use the validated address in the business partner you are creating, click **Accept Changes**.

5. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.

If one or more duplicate records are found, the following window is displayed:

SAP DQC - Address Deduplication Result

PV Status	Similarity	BP Number	Description	Name 1 / Last	Name 2 / First
	100.0	98	/ Po Box 1 / New York NY 10116-0001		
	100.0	136	/ PO Box 1 / New York NY 10002-0001		
	100.0	50	/ Po Box 1 / New York NY 10116-0001		

Row 1 of 3

The PV column (Postal Validation) indicates whether the address has been validated. The icons in the column are described in the following table.

Table 7: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

- To continue with saving the new business partner and ignore the duplicates, click **Continue**.
- To view the selected duplicate and cancel the creation of the new business partner, click **Switch to Duplicate**.
- To view the selected duplicate in a new popup window, click **Display Partner**.

- To return to the new business partner without taking any action on the duplicates, click **Cancel**.
6. After you have validated the address and checked for duplicates, click **Save**.

Viewing and Modifying a Business Partner

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Display Business Partner**.
3. Enter the business partner number. If you do not know the business partner number you can look it up using the fuzzy search feature. For more information, see [Searching for a Business Partner](#) on page 41.
4. Click **Change**.
5. Edit the business partner. For additional information, see [Creating a Business Partner - Organization](#) on page 34 and [Creating a Business Partner - Person](#) on page 31.

Searching for a Business Partner

Error-tolerant searches allow you to find business partners even if the pieces of information are incomplete or partly wrong. The search displays a list of possible matches.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Business Partner**.
3. Click **Fuzzy/Rough Search**.
4. In the **Name** field, enter the name of the business partner you are searching for.
5. Under **Street Address**, enter as much address information as you know.
6. Click **Fuzzy/Rough Search**.

Customers

Creating a Customer - General

A Customer - General record is typically used when the customer is an entity such as a business.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. At the top of the page, click **Customer**.
3. Click **Create Customer** then click **Create Customer General**.
4. Complete the following fields:

Field	Description
Title	A title of respect or professional title.
Name	If the customer is a company, enter the company name. If the customer is a person, enter the first name in the first field and the last name in the second field.
Street/House Number	The person's street and house or building number. For example, 430 Main St.
City	The municipality name.
Postal Code	The postal code for the address.
Country	The country for the address.
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.

Field	Description
PO Box	A post office box number.
Postal Code	If you are entering a PO Box address, the postal code for the address.
Telephone	The phone number for the person. If there is an extension, enter it in the Ext field.
Fax	The fax number for the person. If there is an extension, enter it in the Ext field.
Email	The email for the person.

5. Click **Validate** to validate the address.

- If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

SAP DQC - Postal Validation			
Address Changed			
Address Fields			
House Number	50		50
Street	Water St		water st
City	Lee		lee
Region	MA		MA
Postal Code	01238-9008		01238-9008
Country	US		US

Row 1 of 7

Accept Changes Accept Current

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

SAP DQC - Postal Validation	
beach st san francisco	
Address	
901 Beach St San Francisco CA 94109-1001	
903 Beach St San Francisco CA 94109-1001	
905 Beach St San Francisco CA 94109-1001	
907 Beach St San Francisco CA 94109-1001	
909 Beach St San Francisco CA 94109-1001	
911 Beach St San Francisco CA 94109-1001	
913 Beach St San Francisco CA 94109-1001	
915 Beach St San Francisco CA 94109-1001	
917 Beach St San Francisco CA 94109-1001	
919 Beach St San Francisco CA 94109-1001	
921 Beach St San Francisco CA 94109-1001	
923 Beach St San Francisco CA 94109-1001	
925 Beach St San Francisco CA 94109-1001	
927 Beach St San Francisco CA 94109-1001	
929 Beach St San Francisco CA 94109-1001	

Row 1 of 50

Accept Changes Accept Current Cancel

- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found

Address fields	
House Number	
Street	000 Something Road
City	New York
Region	MA
Postal Code	
Country	US

Row 1 of 6

Accept Current

- To use the validated address in the business partner you are creating, click **Accept Changes**.
6. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.
- If one or more duplicate records are found, the following window is displayed:

PV Status	Similarity	BP Number	Description	Name 1 / Last	Name 2 / First
	100.0	98	/ Po Box 1 / New York NY 10116-0001		
	100.0	136	/ PO Box 1 / New York NY 10002-0001		
	100.0	50	/ Po Box 1 / New York NY 10116-0001		

Row 1 of 3

ContinueSwitch to DuplicateDisplay PartnerCancel

The PV column (Postal Validation) indicates whether the address has been validated. The icons in the column are described in the following table.

Table 8: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

- To continue with saving the new business partner and ignore the duplicates, click **Continue**.
 - To view the selected duplicate and cancel the creation of the new business partner, click **Switch to Duplicate**.
 - To view the selected duplicate in a new popup window, click **Display Partner**.
 - To return to the new business partner without taking any action on the duplicates, click **Cancel**.
7. After you have validated the address and checked for duplicates, click **Save**.

Creating a Customer - Consumer

A Customer - Consumer record is for a customer that is a person rather than a company.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. At the top of the page, click **Customer**.
3. Click **Create Customer** then click **Create Customer General**.
4. Complete the following fields:

Field	Description
Title	A title of respect or professional title.
First Name	The person's given name. For example, in the name John Smith, John is the first name.
Last Name	The person's family name. For example, in the name John Smith, Smith is the last name.
Street/House Number	The person's street and house or building number. For example, 430 Main St.
City	The municipality name.
Postal Code	The postal code for the address.
Country	The country for the address.
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.
PO Box	A post office box number.
Postal Code	If you are entering a PO Box address, the postal code for the address.
Telephone	The phone number for the person. If there is an extension, enter it in the Ext field.
Fax	The fax number for the person. If there is an extension, enter it in the Ext field.
Email	The email for the person.

5. Click **Validate** to validate the address.
 - If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

SAP DQC - Postal Validation

Address Changed

Address Fields		
House Number	50	50
Street	Water St	water st
City	Lee	lee
Region	MA	MA
Postal Code	01238-9008	01238-9008
Country	US	US

Row 1 of 7

Accept Changes Accept Current

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

SAP DQC - Postal Validation

beach st san francisco

Address

901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001
921 Beach St San Francisco CA 94109-1001
923 Beach St San Francisco CA 94109-1001
925 Beach St San Francisco CA 94109-1001
927 Beach St San Francisco CA 94109-1001
929 Beach St San Francisco CA 94109-1001

Row 1 of 50

Accept Changes Accept Current Cancel

- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found

Address fields	
House Number	
Street	000 Something Road
City	New York
Region	MA
Postal Code	
Country	US

Row 1 of 6

Accept Current

- To use the validated address in the business partner you are creating, click **Accept Changes**.





6. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.

If one or more duplicate records are found, the following window is displayed:

[illegible]

The PV column (Postal Validation) indicates whether the address has been validated. The icons in the column are described in the following table.

Table 9: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

- To continue with saving the new business partner and ignore the duplicates, click **Continue**.
- To view the selected duplicate and cancel the creation of the new business partner, click **Switch to Duplicate**.
- To view the selected duplicate in a new popup window, click **Display Partner**.
- To return to the new business partner without taking any action on the duplicates, click **Cancel**.

7. After you have validated the address and checked for duplicates, click **Save**.

Viewing and Modifying a Customer

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. At the top of the page, click **Customer**.
3. Click **Display Customer**.
4. Enter the customer number. If you do not know the customer number you can look it up using the fuzzy search feature. For more information, see [Searching for a Customer](#) on page 47.
5. Click **Change**.

6. Edit the customer. For additional information, see [Creating a Customer - General](#) on page 41 and [Creating a Customer - Consumer](#) on page 44.

Searching for a Customer

Error-tolerant searches allow you to find customers even if the pieces of information are incomplete or partly wrong. The search displays a list of possible matches.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. At the top of the page, click **Customer**
3. Click **Fuzzy/Rough Search**.
4. In the **Name** field, enter the name of the customer you are searching for.
5. Under **Street Address**, enter as much address information as you know.
6. Click **Fuzzy/Rough Search**.

Vendor

Creating a Vendor

A Vendor is typically used for an individual person who acts as a vendor to your organization.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Create Vendor**.
3. Complete the following fields.

Field	Description
Title	A title of respect or a professional title. If the vendor is an organization and not a person, select Company.
Name	The name of the vendor. This can be a person or a company.
Street/House Number	The person's street and house or building number. For example, 430 Main St.
City	The municipality name.
Postal Code	The postal code for the address.
Country	The country for the address.
Region	A sub-area within a country, such as a province, state, or district. You must select a country before you select a region.
PO Box	A post office box number.
PO w/o number	Check this box if you leave the PO Box field blank.
Postal Code	If you are entering a PO Box address, the postal code for the address.
Telephone	The phone number for the person. If there is an extension, enter it in the Ext field.
Fax	The fax number for the person. If there is an extension, enter it in the Ext field.
Email	The email for the person.

4. Click **Validate** to validate the address.
 - If the address can be validated, the Address Changed window displays. As you can see, the validated address is properly cased and the postal code has been added.

SAP DQC - Postal Validation

Address Changed

Address Fields		
House Number	50	50
Street	Water St	water st
City	Lee	lee
Region	MA	MA
Postal Code	01238-9008	01238-9008
Country	US	US

Row 1 of 7

Accept Changes Accept Current

- If the address matches multiple addresses in the postal data, the Address List pop-up displays:

SAP DQC - Postal Validation

beach st san francisco

Address

901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001
921 Beach St San Francisco CA 94109-1001
923 Beach St San Francisco CA 94109-1001
925 Beach St San Francisco CA 94109-1001
927 Beach St San Francisco CA 94109-1001
929 Beach St San Francisco CA 94109-1001

Row 1 of 50

Accept Changes Accept Current Cancel

- If the address could not be validated, the Invalid Address popup is displayed:

SAP DQC - Postal Validation

Request failed. Address not found

Address fields	
House Number	
Street	000 Something Road
City	New York
Region	MA
Postal Code	
Country	US

Row 1 of 6

Accept Current

- To use the validated address in the business partner you are creating, click **Accept Changes**.
5. Click **Deduplicate** to verify that this entry is not already in the SAP system. This helps prevent you from creating a duplicate record.
- If one or more duplicate records are found, the following window is displayed:

SAP DQC - Address Deduplication Result





PV	Status	Similarity	BP Number	Description	Name 1 / Last	Name 2 / First
		100.0	98	/ Po Box 1 / New York NY 10116-0001		
	✓	100.0	136	/ PO Box 1 / New York NY 10002-0001		
	✓	100.0	50	/ Po Box 1 / New York NY 10116-0001		

Row 1 of 3

Continue Switch to Duplicate Display Partner Cancel

The PV column (Postal Validation) indicates whether the address has been validated. The icons in the column are described in the following table.

Table 10: Status Icons

Icon	Description
	Address has been checked and conforms to the reference data.
	Address has been checked and does not conform to the reference data. Only the user can set this status.
	Address has not been checked or it has failed cleansing.
	No Address.

- To continue with saving the new business partner and ignore the duplicates, click **Continue**.
 - To view the selected duplicate and cancel the creation of the new business partner, click **Switch to Duplicate**.
 - To view the selected duplicate in a new popup window, click **Display Partner**.
 - To return to the new business partner without taking any action on the duplicates, click **Cancel**.
6. After you have validated the address and checked for duplicates, click **Save**.

Viewing and Modifying a Vendor

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Display Vendor**.
3. Enter the vendor number. If you do not know the vendor number you can look it up using the fuzzy search feature. For more information, see [Searching for a Vendor](#) on page 50.
4. Click **Change**.

5. Edit the vendor. For additional information, see [Viewing and Modifying a Vendor](#) on page 49.

Searching for a Vendor

Error-tolerant searches allow you to find vendors even if the pieces of information are incomplete or partly wrong. The search displays a list of possible matches.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Vendor**.
3. Click **Fuzzy/Rough Search**.
4. In the **Name** field, enter the name of the vendor you are searching for.
5. Under **Street Address**, enter as much address information as you know.
6. Click **Fuzzy/Rough Search**.

Searching for an Address with Advanced Search

Advanced search helps you find an address when you only know part of the address.

Note: Advanced search is only available for addresses in Canada and the U.S. You must have licensed the Address Now Module in order to use Advanced Search.

1. In a web browser, open the Pitney Bowes Spectrum Data Quality Connector for SAP page.
2. Click **Advanced Search**.
3. Enter part of the address that you know then click the binoculars icon.

The possible matches for your search are displayed in the **In-Context Alternatives** and **Out-of-Context Alternatives** lists. In-context results are those that are valid in combination with the address elements you have already committed, and out-of-context results are those that are not valid in combination with the elements you have already committed.

For example, in the U.S. the following cities exist:

In Illinois:

- CHICAGO
- CHICAGO HTS
- CHICAGO RIDGE
- NORTH CHICAGO
- WEST CHICAGO

In Indiana:

- EAST CHICAGO

In Nevada:

- CHICAGO PARK

If you have already committed a value of "IN" (Indiana) for the state and then searched for the city "chicago", EAST CHICAGO would be an "in context" result because it exists in Indiana, and all the other matches for "chicago" would be out-of-context results. Likewise, if you committed a value of "IL" (Illinois) for the state, EAST CHICAGO and CHICAGO PARK would be out of context, and CHICAGO, CHICAGO HTS, CHICAGO RIDGE, NORTH CHICAGO, and WEST CHICAGO would be "in context."

4. Click the value you want in either **In Context Alternatives** or **Out of Context Alternatives**, then click **Select in Context** or **Select Out of Context** to apply your selection to the search criteria.
5. Click the binoculars icon next to a blank field to see options for that field.
6. Continue searching until all fields are complete enough for it to be considered as a complete and valid address.

Note: To clear your results and start over, click **New Search**.

7. To create a new record using the address, click **Create Customer**.

Advanced Search Example

The following example illustrates how to search for an address when you only know parts of the address. In this example, you know the ZIP Code, Street name, and Suite number but not the city, state,

1. In the **Zip** field, enter 60610 and click the binoculars icon.
2. Under **In Context Alternatives**, select 60610 and click **Select In Context**.
3. Click the binoculars button next to the **Street** field. A list of streets in the 60610 ZIP Code is displayed.
4. Scroll down and select N STATE ST then click **Select In Context**.
5. Click the binoculars button next to the **Premise-No** field. A list of valid building numbers for N STATE ST in the 60610 ZIP Code is displayed.
6. Select 1050 then click **Select In Context**.

Using the SAP ICWC

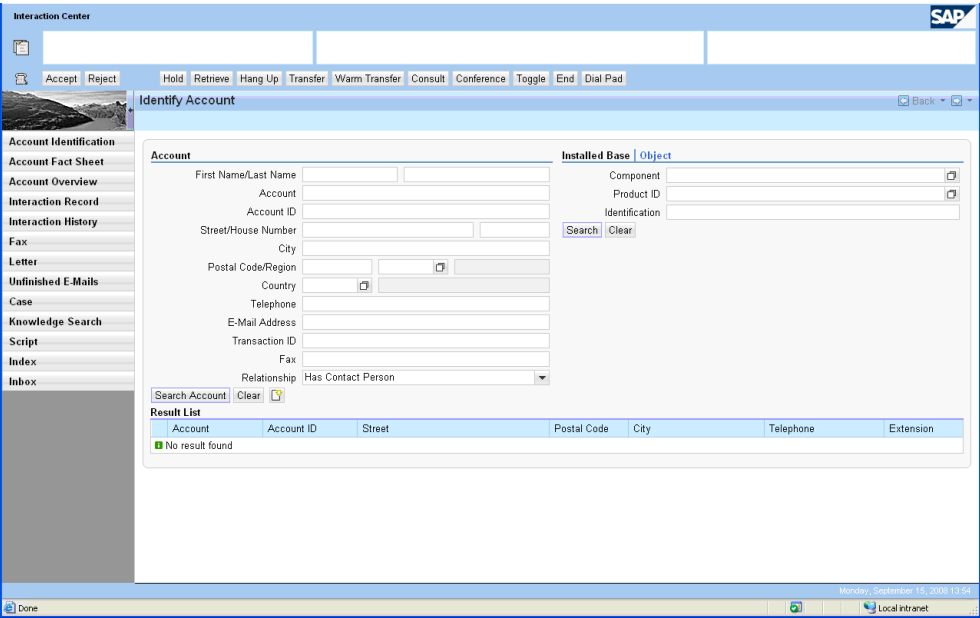
In this section:


- **Querying**54
- **Creating Business Partner Account**55
- **Modifying Business Partner Account**56
- **Validating an Address**56
- **Data De-duplication**58
- **Error Handling**59

Querying

Error-tolerant search allow users to find customers, vendors, prospects, or business partners, even if the pieces of information are incomplete or partly wrong.

The querying page of CRM IC Web Client is the default page that will be loaded after you have login to IC Web Client.





Button	Function
Search Account	Perform search using the provided information
Clear	Clear all the fields
	Go to create account page

Entering any information in the search field will perform the error-tolerant search. When multiple matches were found, results will be displayed in the Result List table. When exact match was found, Modify Account page will be displayed.

Here, the user can choose (select) from the result list to display the details of the account, or simply click on Clear button to reset the search.

Creating Business Partner Account

The Create Account page is used for creating Business Partner Account. It can be accessed by clicking the Create Account button in the search screen.

Button	Function
	Perform postal validation and data de-duplication and save the created account.
	Cancels the create account process. It will return to previous screen.
Enter	Perform postal validation and data de-duplication.

During the creation of account, Data Cleansing and Data De-duplication will be performed. For more details about Data Cleansing please refer to section 4.4 Data Cleansing and for Data De-duplication please refer to section 4.5 Data De-duplication.

Modifying Business Partner Account

The Modify Account page is used for displaying/modifying of Business Partner Account. It can be accessed by selecting an account in search screen.

Identify Account (ID: 93)
Back
1 Message

Postal Validation complete.

Account
More Fields




First Name/Last Name
Function
Department
Account
Sample
Street/House Number
Milk St
33
City
Boston
Postal Code/Region
02109-5101
MA
Massachusetts
Country
US
USA
Contact Info For
Account
Telephone/Extension
Fax/Extension
E-Mail Address

Installed Base
Object

Component
Product ID
Identification

Search
Clear

Confirm
Related

Button	Function
Confirm	<p>Confirm the account</p> <p>Perform postal validation and data de-duplication then save the account.</p>
	
	<p>Cancels the modify account process. It will return to previous screen</p>
Related	<p>Create related business partner or contact person.</p> <p>Start modifying the account. This button should be clicked to enable Save button</p>
	
Enter	Perform postal validation and data de-duplication.

To start modifying the account, user must click Edit button. When user have finished modifying the account and clicked the save button, Data Cleansing and Data De-duplication will be performed. For more details about Data Cleansing please refer to section 4.4 Data Cleansing and for Data De-duplication please refer to section 4.5 Data De-duplication.

Validating an Address

When you enter an address into SAP, the SAP Module attempts to validate the address and allows you to accept or reject the validated address.

1. Enter the address data in SAP.

For example:

33 milk st, boston, ma, US

Create Account

Account* Sample

Account ID 95

Street/House Number 33 milk st

City boston

Postal Code/Region ma

Country US

Telephone

Fax

E-Mail Address

2. When you save the record, the address validation process attempts to validate the address. Depending on the result of the validation process, one of the following windows appears:
 - If the address can be validated, the Postal Validation window shows the validated (Proposed) address and the address as you entered it (Current Address).

GROUP 1 SAP DQC - Postal Validation -- Web Page Dialog

Address Changed

Address Fields	Proposed Address	Current Address
House Number	33	
Street	Milk St	33 milk st
City	Boston	boston
Region	MA	MA
Postal Code	02109-5101	
Country	US	US
Tax Jurisdiction Code	220210900	

Accept Changes Accept Current

- If the address you entered matches to multiple addresses in the postal data, the Address List Popup displays candidate addresses.

GROUP 1 SAP DQC - Postal Validation -- Web Page Dialog

beach st. san francisco CA

Proposed Address

901 Beach St San Francisco CA 94109-1001
903 Beach St San Francisco CA 94109-1001
905 Beach St San Francisco CA 94109-1001
907 Beach St San Francisco CA 94109-1001
909 Beach St San Francisco CA 94109-1001
911 Beach St San Francisco CA 94109-1001
913 Beach St San Francisco CA 94109-1001
915 Beach St San Francisco CA 94109-1001
917 Beach St San Francisco CA 94109-1001
919 Beach St San Francisco CA 94109-1001

Back 1 2 3 4 5 Forward

Accept Changes Accept Current


- If the address cannot be validated, the Invalid Entry Popup displays with the appropriate error message.

GROUP 1 SAP DQC - Postal Validation -- Web Page Dialog

RequestFailedAddress Not Found:PostalCode, City

Address Fields	Current Address
House Number	
Street	000 INVALID STREET
City	INVALID CITY
Region	MD
Postal Code	
Country	US
Tax Jurisdiction Code	

Accept Current

3. Choose the action you want to perform:
- Click **Accept Changes** to accept the address in the Proposed Address column.
 - Click **Accept Current** to accept the address in the Current Address column.
 - Click  to cancel the validation.

Data De-duplication

Data De-duplication is the process of identifying duplicate records in a data set. These duplicate records will be presented to the user so that appropriate action (i.e. ignore or choose duplicate record) can be taken.

If a record in the system is similar with the record being created, Data De-duplication takes place after address validation. The duplicate result list shows the candidate duplicate or duplicates of the record being created.

Identify Account

Business partner 101 is a duplicate

Postal Validation complete.

2 Messages

Create Account

Account* sample

Business Partner 101

Street/House Number Milk St 33

City Boston

Postal Code/Region 02109-5101 MA Massachusetts

Country US USA

Telephone

Fax

E-Mail Address

Installed Base | Object

Component

Product ID

Identification

Search Clear

Check

Result List - 1 Account(s) found

Full Name	Telephone	Street	City	Cou...
Sample		Milk St	Boston	US

Button

Function

Check

Check if the modified information still contains duplicates.

Pushes through with the creation of the current record



Cancels de-duplication and account creation.



Enter

Same as Check button

User can select the candidate duplicate by clicking on the Result List table. When a duplicate was selected, it will cancel the creation of current account.

Error Handling

There are two kinds of error messages provided in this system. The first kind are standard error messages provided by SAP Data Quality Connector, which are discussed in the Using SAP Interface chapter. The second kind are information and error messages provided by the SAP CRM IC Web Client.

Most error messages being handled are returned by SAP Data Quality Connector. The messages are then displayed to the user. There are error messages created by SAP CRM IC Web Client, such as the account is required when saving message.

The screenshot shows the 'Identify Account' form with a yellow message bar at the top containing two error messages: 'Make an entry in field 'Account'' and 'Required field has no entry'. The form has two main sections: 'Create Account' on the left and 'Installed Base | Object' on the right. The 'Create Account' section includes fields for Account*, Account ID (90), Street/House Number, City, Postal Code/Region, Country, Telephone, Fax, and E-Mail Address. The 'Installed Base | Object' section includes fields for Component, Product ID, and Identification, with Search and Clear buttons.

Another example is the postal validation was cancelled by the user message.

The screenshot shows the 'Identify Account' form with a yellow message bar at the top containing one message: 'Cancelled by the user.'. The form layout is identical to the previous screenshot, but the 'Create Account' section now shows filled-in data: Account* (Sample), Account ID (91), Street/House Number (33 milk st), City (boston), Postal Code/Region (12345 MA Massachusetts), and Country (US USA). The 'Installed Base | Object' section remains empty.

Component Reference

In this section:

- SAP Batch Assign GeoTAX Info62
- SAP Batch Validate Address62
- SAP Generate CASS Report62
- SAP Generate Match Key62
- SAP Generate Match Score62
- SAP Generate Search Key63
- SAP Generate Search Key Consonant63
- SAP Generate Search Key Metaphone63
- SAP Generate Search Key Substring63
- SAP Validate Address and Assign GeoTAX Info63
- SAP Validate Address With Candidates63

SAP Batch Assign GeoTAX Info

SAP Batch Assign GeoTAX Info identifies the tax districts that apply to a given address. It also corrects and validates addresses.

Note: There is a version of this service that uses the Enterprise Tax Module. This version will be used if you require Taxware information, such the Tax Jurisdiction Code or the Tax County.

SAP Batch Validate Address

SAP Batch Validate Address standardizes and validates address data using batch processing.

SAP Generate CASS Report

SAP Generate CASS Report reads input data from a file that is located in Spectrum™ Technology Platform installation directory. This file contains input addresses. Each line contains one record and each record contains address information that is separated by tabs.

SAP Generate Match Key

This service is used in generating a match key. The match key is generated using Substring, Metaphone, and Consonant algorithms. These algorithms are described below:

Table 11: Key Generation Algorithms

Algorithm	Description
Substring	Returns a specified portion of the selected field.
Metaphone	Returns a metaphone coded key of selected fields. Metaphone is an algorithm for coding words using their English pronunciation.
Consonant	Returns specified fields with consonants removed.

SAP Generate Match Score

This service is used in comparing candidate records and generating a score that reflects their similarity. The higher the score, the closer the match.

SAP Generate Search Key

This service generates a search key using metaphone, substring, and consonant algorithms..

SAP Generate Search Key Consonant

Used in Search Key Generation for Consonant Algorithm.

SAP Generate Search Key Metaphone

SAP Generate Search Key Metaphone generates a search key using the metaphone algorithm. The Metaphone algorithm codes words using their English pronunciation.

SAP Generate Search Key Substring

SAP Generate Search Key Substring creates a search key by taking a portion of each field and combining the result.

SAP Validate Address and Assign GeoTAX Info

SAP Validate Address and Assign GeoTAX Info validates the addresses and determines the tax jurisdictions that apply to the address.

SAP Validate Address With Candidates

SAP Validate Address With Candidates validates addresses. If an address matches multiple addresses in the postal data, it returns the candidate addresses.

Country ISO Codes and Module Support

In this section:

- [Country ISO Codes and Module Support66](#)

Country ISO Codes and Module Support

The following table lists the ISO codes for each country as well as the modules that support addressing, geocoding, and routing for each country.

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Afghanistan	AF	AFG	Address Now Module Universal Addressing Module
Aland Islands	AX	ALA	Address Now Module Universal Addressing Module
Albania	AL	ALB	Address Now Module Universal Addressing Module
Algeria	DZ	DZA	Address Now Module Universal Addressing Module
American Samoa	AS	ASM	Address Now Module Universal Addressing Module
Andorra	AD	AND	Address Now Module Enterprise Geocoding Module ¹ Universal Addressing Module
Angola	AO	AGO	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Anguilla	AI	AIA	Address Now Module Universal Addressing Module
Antarctica	AQ	ATA	Address Now Module Universal Addressing Module
Antigua And Barbuda	AG	ATG	Address Now Module Universal Addressing Module
Argentina	AR	ARG	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Armenia	AM	ARM	Address Now Module Universal Addressing Module
Aruba	AW	ABW	Address Now Module Universal Addressing Module
Australia	AU	AUS	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module

¹ Andorra is covered by the Spain geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Austria	AT	AUT	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Azerbaijan	AZ	AZE	Address Now Module Universal Addressing Module
Bahamas	BS	BHS	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Bahrain	BH	BHR	Address Now Module Universal Addressing Module
Bangladesh	BD	BGD	Address Now Module Universal Addressing Module
Barbados	BB	BRB	Address Now Module Universal Addressing Module
Belarus	BY	BLR	Address Now Module Universal Addressing Module
Belgium	BE	BEL	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Belize	BZ	BLZ	Address Now Module Universal Addressing Module
Benin	BJ	BEN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Bermuda	BM	BMU	Address Now Module Universal Addressing Module
Bhutan	BT	BTN	Address Now Module Universal Addressing Module
Bolivia, Plurinational State Of	BO	BOL	Address Now Module Universal Addressing Module
Bonaire, Saint Eustatius And Saba	BQ	BES	Address Now Module Universal Addressing Module
Bosnia And Herzegovina	BA	BIH	Address Now Module Universal Addressing Module
Botswana	BW	BWA	Address Now Module Enterprise Geocoding Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Bouvet Island	BV	BVT	Address Now Module Universal Addressing Module
Brazil	BR	BRA	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
British Indian Ocean Territory	IO	IOT	Address Now Module Universal Addressing Module
Brunei Darussalam	BN	BRN	Address Now Module Universal Addressing Module
Bulgaria	BG	BGR	Address Now Module Universal Addressing Module
Burkina Faso	BF	BFA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Burundi	BI	BDI	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Cambodia	KH	KHM	Address Now Module Universal Addressing Module
Cameroon	CM	CMR	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Canada	CA	CAN	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Cape Verde	CV	CPV	Address Now Module Universal Addressing Module
Cayman Islands	KY	CYM	Address Now Module Universal Addressing Module
Central African Republic	CF	CAF	Address Now Module Universal Addressing Module
Chad	TD	TCD	Address Now Module Universal Addressing Module
Chile	CL	CHL	Address Now Module Enterprise Geocoding Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
China	CN	CHN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Christmas Island	CX	CXR	Address Now Module Universal Addressing Module
Cocos (Keeling) Islands	CC	CCK	Address Now Module Universal Addressing Module
Colombia	CO	COL	Address Now Module Universal Addressing Module
Comoros	KM	COM	Address Now Module Universal Addressing Module
Congo	CG	COG	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Congo, The Democratic Republic Of The	CD	COD	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Cook Islands	CK	COK	Address Now Module Universal Addressing Module
Costa Rica	CR	CRI	Address Now Module Universal Addressing Module
Côte d'Ivoire	CI	CIV	Address Now Module Universal Addressing Module
Croatia	HR	HRV	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Cuba	CU	CUB	Address Now Module Universal Addressing Module
Curacao	CW	CUW	Address Now Module Universal Addressing Module
Cyprus	CY	CYP	Address Now Module Universal Addressing Module
Czech Republic	CZ	CZE	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Denmark	DK	DNK	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Djibouti	DJ	DJI	Address Now Module Universal Addressing Module
Dominica	DM	DMA	Address Now Module Universal Addressing Module
Dominican Republic	DO	DOM	Address Now Module Universal Addressing Module
Ecuador	EC	ECU	Address Now Module Universal Addressing Module
Egypt	EG	EGY	Address Now Module Universal Addressing Module
El Salvador	SV	SLV	Address Now Module Universal Addressing Module
Equatorial Guinea	GQ	GNQ	Address Now Module Universal Addressing Module
Eritrea	ER	ERI	Address Now Module Universal Addressing Module
Estonia	EE	EST	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Ethiopia	ET	ETH	Address Now Module Universal Addressing Module
Falkland Islands (Malvinas)	FK	FLK	Address Now Module Universal Addressing Module
Faroe Islands	FO	FRO	Address Now Module Universal Addressing Module
Fiji	FJ	FJI	Address Now Module Universal Addressing Module
Finland	FI	FIN	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
France	FR	FRA	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
French Guiana	GF	GUF	Address Now Module Enterprise Geocoding Module ² Universal Addressing Module

² French Guiana is covered by the France geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
French Polynesia	PF	PYF	Address Now Module Universal Addressing Module
French Southern Territories	TF	ATF	Address Now Module Universal Addressing Module
Gabon	GA	GAB	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Gambia	GM	GMB	Address Now Module Universal Addressing Module
Georgia	GE	GEO	Address Now Module Universal Addressing Module
Germany	DE	DEU	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Ghana	GH	GHA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Gibraltar	GI	GIB	Address Now Module Enterprise Geocoding Module ³ Universal Addressing Module
Greece	GR	GRC	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Greenland	GL	GRL	Address Now Module Universal Addressing Module
Grenada	GD	GRD	Address Now Module Universal Addressing Module
Guadeloupe	GP	GLP	Address Now Module Enterprise Geocoding Module ⁴ Universal Addressing Module
Guam	GU	GUM	Address Now Module Universal Addressing Module
Guatemala	GT	GTM	Address Now Module Universal Addressing Module
Guernsey	GG	GGY	Address Now Module Universal Addressing Module

³ Gibraltar is covered by the Spain geocoder

⁴ Guadeloupe is covered by the France geocode

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Guinea	GN	GIN	Address Now Module Universal Addressing Module
Guinea-Bissau	GW	GNB	Address Now Module Universal Addressing Module
Guyana	GY	GUY	Address Now Module Universal Addressing Module
Haiti	HT	HTI	Address Now Module Universal Addressing Module
Heard Island and McDonald Islands	HM	HMD	Address Now Module Universal Addressing Module
Holy See (Vatican City State)	VA	VAT	Address Now Module Enterprise Geocoding Module ⁵ Universal Addressing Module
Honduras	HN	HND	Address Now Module Universal Addressing Module
Hong Kong	HK	HKG	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Hungary	HU	HUN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Iceland	IS	ISL	Address Now Module Universal Addressing Module
India	IN	IND	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Indonesia	ID	IDN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Iran, Islamic Republic Of	IR	IRN	Address Now Module Universal Addressing Module
Iraq	IQ	IRQ	Address Now Module Universal Addressing Module
Ireland	IE	IRL	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module

⁵ The Vatican is covered by the Italy geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Isle Of Man	IM	IMN	Address Now Module Universal Addressing Module
Israel	IL	ISR	Address Now Module Universal Addressing Module
Italy	IT	ITA	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Jamaica	JM	JAM	Address Now Module Universal Addressing Module
Japan	JP	JPN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Jersey	JE	JEY	Address Now Module Universal Addressing Module
Jordan	JO	JOR	Address Now Module Universal Addressing Module
Kazakhstan	KZ	KAZ	Address Now Module Universal Addressing Module
Kenya	KE	KEN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Kiribati	KI	KIR	Address Now Module Universal Addressing Module
Korea, Democratic People's Republic Of	KP	PRK	Address Now Module Universal Addressing Module
Korea, Republic Of	KR	KOR	Address Now Module Universal Addressing Module
Kosovo	KS	KOS	Address Now Module Universal Addressing Module
Kuwait	KW	KWT	Address Now Module Universal Addressing Module
Kyrgyzstan	KG	KGZ	Address Now Module Universal Addressing Module
Lao People's Democratic Republic	LA	LAO	Address Now Module Universal Addressing Module
Latvia	LV	LVA	Address Now Module Enterprise Geocoding Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Lebanon	LB	LBN	Address Now Module Universal Addressing Module
Lesotho	LS	LSO	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Liberia	LR	LBR	Address Now Module Universal Addressing Module
Libyan Arab Jamahiriya	LY	LBY	Address Now Module Universal Addressing Module
Liechtenstein	LI	LIE	Address Now Module Enterprise Geocoding Module ⁶ Enterprise Routing Module Universal Addressing Module
Lithuania	LT	LTU	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Luxembourg	LU	LUX	Address Now Module Enterprise Geocoding Module ⁷ Enterprise Routing Module Universal Addressing Module
Macao	MO	MAC	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Macedonia, Former Yugoslav Republic Of	MK	MKD	Address Now Module Universal Addressing Module
Madagascar	MG	MDG	Address Now Module Universal Addressing Module
Malawi	MW	MWI	Address Now Module Universal Addressing Module
Malaysia	MY	MYS	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Maldives	MV	MDV	Address Now Module Universal Addressing Module
Mali	ML	MLI	Address Now Module Enterprise Geocoding Module Universal Addressing Module

⁶ Liechtenstein is covered by the Switzerland geocoder

⁷ Luxembourg is covered by the Belgium geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Malta	ML	MLT	Address Now Module Universal Addressing Module
Marshall Islands	MH	MHL	Address Now Module Universal Addressing Module
Martinique	MQ	MTQ	Address Now Module Enterprise Geocoding Module Guadeloupe is covered by the France geocode Universal Addressing Module
Mauritania	MR	MRT	Address Now Module Universal Addressing Module
Mauritius	MU	MUS	Address Now Module Universal Addressing Module
Mayotte	YT	MYT	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Mexico	MX	MEX	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Micronesia, Federated States Of	FM	FSM	Address Now Module Universal Addressing Module
Moldova, Republic Of	MD	MDA	Address Now Module Universal Addressing Module
Monaco	MC	MCO	Address Now Module Enterprise Geocoding Module ¹⁰ Universal Addressing Module
Mongolia	MN	MNG	Address Now Module Universal Addressing Module
Montenegro	ME	MNE	Address Now Module Universal Addressing Module
Montserrat	MS	MSR	Address Now Module Universal Addressing Module
Morocco	MA	MAR	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Mozambique	MZ	MOZ	Address Now Module Enterprise Geocoding Module Universal Addressing Module

⁸ Martinique is covered by the France geocoder.

⁹ Mayotte is covered by the France geocoder.

¹⁰ Monaco is covered by the France geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Myanmar	MM	MMR	Address Now Module Universal Addressing Module
Namibia	NA	NAM	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Nauru	NR	NRU	Address Now Module Universal Addressing Module
Nepal	NP	NPL	Address Now Module Universal Addressing Module
Netherlands	NL	NLD	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
New Caledonia	NC	NCL	Address Now Module Universal Addressing Module
New Zealand	NZ	NZL	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Nicaragua	NI	NIC	Address Now Module Universal Addressing Module
Niger	NE	NER	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Nigeria	NG	NGA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Niue	NU	NIU	Address Now Module Universal Addressing Module
Norfolk Island	NF	NFK	Address Now Module Universal Addressing Module
Northern Mariana Islands	MP	MNP	Address Now Module Universal Addressing Module
Norway	NO	NOR	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Oman	OM	OMN	Address Now Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Pakistan	PK	PAK	Address Now Module Universal Addressing Module
Palau	PW	PLW	Address Now Module Universal Addressing Module
Palestinian Territory, Occupied	PS	PSE	Address Now Module Universal Addressing Module
Panama	PA	PAN	Address Now Module Universal Addressing Module
Papua New Guinea	PG	PNG	Address Now Module Universal Addressing Module
Paraguay	PY	PRY	Address Now Module Universal Addressing Module
Peru	PE	PER	Address Now Module Universal Addressing Module
Philippines	PH	PHL	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Pitcairn	PN	PCN	Address Now Module Universal Addressing Module
Poland	PL	POL	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Portugal	PT	PRT	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Puerto Rico	PR	PRI	Address Now Module Universal Addressing Module
Qatar	QA	QAT	Address Now Module Universal Addressing Module
Reunion	RE	REU	Address Now Module Enterprise Geocoding Module ¹¹ Universal Addressing Module
Romania	RO	ROU	Address Now Module Universal Addressing Module

¹¹ Reunion is covered by the France geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Russian Federation	RU	RUS	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Rwanda	RW	RWA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Saint Barthelemy	BL	BLM	Address Now Module Universal Addressing Module
Saint Helena, Ascension & Tristan Da Cunha	SH	SHE	Address Now Module Universal Addressing Module
Saint Kitts and Nevis	KN	KNA	Address Now Module Universal Addressing Module
Saint Lucia	LC	LCA	Address Now Module Universal Addressing Module
Saint Martin (French Part)	MF	MAF	Address Now Module Universal Addressing Module
Saint Pierre and Miquelon	PM	SPM	Address Now Module Universal Addressing Module
Saint Vincent And The Grenadines	VC	VCT	Address Now Module Universal Addressing Module
Samoa	WS	WSM	Address Now Module Universal Addressing Module
San Marino	SM	SMR	Address Now Module Enterprise Geocoding Module ¹² Universal Addressing Module
Sao Tome And Principe	ST	STP	Address Now Module Universal Addressing Module
Saudi Arabia	SA	SAU	Address Now Module Universal Addressing Module
Senegal	SN	SEN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Serbia	RS	SRB	Address Now Module Universal Addressing Module
Seychelles	SC	SYC	Address Now Module Universal Addressing Module

¹² San Marino is covered by the Italy geocoder

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Sierra Leone	SL	SLE	Address Now Module Universal Addressing Module
Singapore	SG	SGP	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Sint Maarten (Dutch Part)	SX	SXM	Universal Addressing Module
Slovakia	SK	SVK	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Slovenia	SI	SVN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Solomon Islands	SB	SLB	Address Now Module Universal Addressing Module
Somalia	SO	SOM	Address Now Module Universal Addressing Module
South Africa	ZA	ZAF	Address Now Module Enterprise Geocoding Module Universal Addressing Module
South Georgia And The South Sandwich Islands	GS	SGS	Address Now Module Enterprise Geocoding Module Universal Addressing Module
South Sudan	SS	SSD	Address Now Module Universal Addressing Module
Spain	ES	ESP	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Sri Lanka	LK	LKA	Address Now Module Universal Addressing Module
Sudan	SD	SDN	Address Now Module Universal Addressing Module
Suriname	SR	SUR	Address Now Module Universal Addressing Module
Svalbard And Jan Mayen	SJ	SJM	Address Now Module Universal Addressing Module
Swaziland	SZ	SWZ	Address Now Module Enterprise Geocoding Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Sweden	SE	SWE	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Switzerland	CH	CHE	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Syrian Arab Republic	SY	SYR	Address Now Module Universal Addressing Module
Taiwan, Province of China	TW	TWN	Address Now Module Universal Addressing Module
Tajikistan	TJ	TJK	Address Now Module Universal Addressing Module
Tanzania, United Republic Of	TZ	TZA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Thailand	TH	THA	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
Timor-Leste	TL	TLS	Address Now Module Universal Addressing Module
Togo	TG	TGO	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Tokelau	TK	TKL	Address Now Module Universal Addressing Module
Tonga	TO	TON	Address Now Module Universal Addressing Module
Trinidad and Tobago	TT	TTO	Address Now Module Universal Addressing Module
Tunisia	TN	TUN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Turkey	TR	TUR	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Turkmenistan	TM	TKM	Address Now Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Turks And Caicos Islands	TC	TCA	Address Now Module Universal Addressing Module
Tuvalu	TV	TUV	Address Now Module Universal Addressing Module
Uganda	UG	UGA	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Ukraine	UA	UKR	Address Now Module Enterprise Geocoding Module Universal Addressing Module
United Arab Emirates	AE	ARE	Address Now Module Universal Addressing Module
United Kingdom	GB	GBR	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
United States	US	USA	Address Now Module Enterprise Geocoding Module Enterprise Routing Module Universal Addressing Module
United States Minor Outlying Islands	UM	UMI	Address Now Module Universal Addressing Module
Uruguay	UY	URY	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Uzbekistan	UZ	UZB	Address Now Module Universal Addressing Module
Vanuatu	VU	VUT	Address Now Module Universal Addressing Module
Venezuela, Bolivarian Republic Of	VE	VEN	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Viet Nam	VN	VNM	Address Now Module Universal Addressing Module
Virgin Islands, British	VG	VGB	Address Now Module Universal Addressing Module
Virgin Islands, U.S.	VI	VIR	Address Now Module Universal Addressing Module
Wallis and Futuna	WF	WLF	Address Now Module Universal Addressing Module

ISO Country Name (English)	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	Supported Modules
Western Sahara	EH	ESH	Address Now Module Universal Addressing Module
Yemen	YE	YEM	Address Now Module Universal Addressing Module
Zambia	ZM	ZMB	Address Now Module Enterprise Geocoding Module Universal Addressing Module
Zimbabwe	ZW	ZWE	Address Now Module Enterprise Geocoding Module Universal Addressing Module

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