

DuoShare Address Quality Integration

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Introduction to Address List Validation

Address list validation is the process that matches addresses in a list to the population of known deliverable addresses when a customer uses DuoShare Address Quality Services. When a match is made, DuoShare assigns mailing industry information codes to the address record. Examples of the codes are ZIP Code™, ZIP + 4® , Delivery Point, Carrier Route, Line of Travel, etc. DuoShare also adds data such as congressional district, geographical coordinates, county, etc.

When a match is not made, DuoShare attempts to automatically repair an address using over 500 individual techniques. DuoShare detects when someone moves, when a street name changes, when a common misspelling occurs or when to provide a standard abbreviation. In total, DuoShare maintains an active database of over 4 billion data points that is available to subscribers not only for address quality, but also for browsing and target marketing development. Finally, if DuoShare cannot automatically repair the address, the end user can interactively repair the “bad address,” with the aid of error messages and suggested answers.

Address lists can be CASS Certified™ using DuoShare Address Quality Services™ to qualify for USPS® mail automation rates.

Benefits of CASS™ Certification:

Mail piece deliverability is enhanced by address verification and DPV™ (Delivery Point Validation). Postal customers who CASS certify their mail lists can present PS Form 3553 to the Post Office™ with mailings to take full advantage of automation discounts.

Benefits of Using DuoShare CASS Certification versus the Competition:

DuoShare has the ability to reduce the number of records processed in subsequent lists following initial address list validation, which means your processing costs decrease after the first validation. In addition to CASS Certification, DuoShare includes other address quality solutions as a part of the standard validation process:

- **Z4Change:** Using Z4Change data provided by the USPS, DuoShare searches an address list to flag only addresses affected by Postal Service™ changes since the last validation date, which reduces processing costs.
- **LACS^{Link}™** (Locatable Address Conversion System): Using LACS encrypted data provided by the USPS, DuoShare converts from rural to city-style addresses as a result of 911 emergency system implementation. As of 2004, 2.8 million rural addresses have been converted, with 1.9 million addresses that remain to be converted. With a conversion rate of 300,000 to 400,000 per year, it is estimated that the remaining rural addresses will be completely converted by 2010.
- **eLOT™** (Enhanced Line of Travel): Using eLOT data provided by the USPS, DuoShare adds eLOT sequence numbers to addresses to allow mail pieces to be sorted into approximate carrier delivery sequence. eLOT processing can be used to qualify for enhanced carrier route presort discounts.
- **NCOA^{Link}™** (National Change of Address): Using NCOA encrypted data provided by the USPS, DuoShare provides change of address information for people and businesses that have moved within the past 48 months.
- **DPV** (Delivery Point Validation): Using encrypted data provided by the USPS,

DuoShare is able to determine whether an address is an exact known deliverable address. While CASS can determine if an address falls within a defined range on a street, and a defined secondary range, DPV is precise down to the address primary and secondary number. A CASS address is used as input to the Delivery Point Validation.

With DuoShare you can:

- Lower your processing costs after your first address list validation by using our Merge Current List option for subsequent processing and incremental validation.
- Save money on printing, materials, and postage costs by correcting your address list.
- Reduce or eliminate additional charges levied by the post office if you place service requests on your mail.
- Minimize address errors using address quality to clean your list regularly.
- Reduce the additional cost for re-mailings of returned mail by using Address Quality Services.
- Improve delivery for time-critical mail such as monthly billing with clean, accurate addresses.
- Save manpower hours by reducing the need to sift through returned mail.

DuoShare offers several types of address list validation as part of its Address Quality Services:

- **Interactive Address Validation**
- **Distributed Batch Validation**
- **In-place Batch Validation**

Interactive Address Validation

Interactive Address Validation integrates at the front end of your application so that addresses manually entered are validated as soon as they are keyed, eliminating costly keying errors and ensuring valid address data. Enter an address to validate and an immediate response is returned upon validation. If the address could not be validated, you receive a response stating the reason it was not validated. With the aid of the interactive wizard, the user is guided to the correct answer. There are two interface methods for Interactive Address Validation:

- **Form-based Interactive Interface** – A client application provides a form or inserts the DuoShare sample form to validate a single address on a web page. The user submits the address to DuoShare using the form. Once validation is complete, DuoShare returns the user to the designated web page.
- **HTTP-based Interactive Interface** - A program submits an address for validation using browser emulation. The program opens an HTTP connection to post the form elements in the same way a web browser posts a form. The validation response is returned to the program, which parses the response.

Distributed Batch Validation

Distributed Batch Validation accepts data files that are uploaded to DuoShare. Log into DuoShare to upload your list, then download the list upon completion of validation.

Distributed Batch Validation Steps:

1. Export from source system.
2. Upload to DuoShare.

3. Import into DuoShare database.
4. Process validation.
5. Export from DuoShare database.
6. Download to Customer.
7. Merge back to source system.

Distributed Batch Validation Records:

When a list is submitted for validation, DuoShare handles the list as a batch processing job. The **Lists** page displays a list of your submitted lists. You can select **Create** on the Lists page to upload and validate a new address list.

A **List Detail** record is created for each address in the list, containing the input address and, once validation has been performed, the answer, as well as Mailing Industry information. **List Detail** record information is displayed in the **View List Detail** page.

A **List** record is created for the list, containing customer and list information as well as PS Form 3553 data. **List** record information is displayed in the **View List** page. You can display a **View List** page by selecting the list on the **Lists** page. **View List** includes links to additional functions that can be performed for a list:

- **Bad Address Report:** Prints a list of addresses that could not be validated or corrected.
- **Fix Bad Addresses:** Bad addresses that could not be validated can be fixed interactively by manually fixing obvious mistakes with the aid of error messages or selecting an alternate address from displayed suggestions. You can also choose to skip a bad address without fixing or cancel the fix process.
- **Reset Skipped Addresses:** Bad addresses skipped during **Fix Bad Addresses** can be reset to allow skipped addresses to be shown during subsequent **Fix Bad Address** requests.
- **Merge Current List:** The previously validated list can be merged with the current list. When a current address list merges with the previous list, new and changed records are flagged for validation. **Merge Current List** automatically runs **Validate Incremental** once the lists are merged. The ability to flag only those records that need validation reduces processing costs and expedites list turnaround.
- **Merge Multiple Lists:** Combine one or more address lists. While merging lists, options may include removing duplicate addresses, culling the list to eliminate potentially undeliverable addresses, and incremental validation.
- **Validate Full:** Revalidate an entire address list, including records that may not need revalidation. Processing charges will apply for all records in the list, depending on your pricing plan.

- **Validate Incremental:** Compare address records in a previously validated list against current USPS Z4Change data to revalidate only addresses affected by Postal Service changes since the last validation date. Charges are assessed for only those records that are revalidated, which reduces your costs and processing time. Lists must be fully validated once every 3 years.
- **Enable COA:** Compare address records to NCOA data to determine if a mail recipient has moved. Change of Address processing is required every 6 months to qualify for automation discount rates.

Advantages of Distributed Batch Validation

- Bad addresses can be fixed interactively in an isolated environment prior to downloading the finished list.
- You can choose which fields to export and the order in which to export fields. For example, the original input information can be exported with the corrected answer, allowing you to see changes made during validation.
- Validated lists are maintained in the DuoShare database, allowing you to merge subsequent lists as a way to reduce processing costs and turnaround time.

Limitations of Distributed Batch Validation

- While a list is being validated, records may need to be added or edited in your local system. The program that imports the finished list back into your local system should detect these changes and not overwrite fields that were changed in the local system during validation. DuoShare can return the original input information with the corrected answer to assist in reconciling local changes. A timestamp or flag should be utilized in the local system to detect changes that occur during validation.
- The corrected address data is not immediately available to the local program, as the entire list must be merged into the local program once validation is complete.

Using Distributed Batch Validation for the First Time:

To begin the initial job setup, select **Create** on the **Lists** page. The first time a list is validated, the input list fields must be mapped to DuoShare and the output list fields must be mapped to your specifications. The wizard assists you in the mapping process and submits the list. The entire list is processed and the mapping definitions are saved for subsequent use.

Processing Subsequent Lists with Distributed Batch Validation:

The next time you upload a list, **Merge Current List** can be used to reduce the number of records requiring revalidation, which speeds up validation and lowers processing costs. Merging the new list with the stored list uses the previous mapping.

In-place Batch Validation

In-place Batch Validation uses a client application or DuoShare custom integration to transfer data from another application. The client application submits repeated requests of one to ten input addresses. There are two types of In-place Batch Validation: **Synchronous** and **Asynchronous**.

- **Synchronous In-Place Batch Validation**

Synchronous data transfer is a familiar request/reply exchange in which a client application

submits an address validation request and a response is returned as the client application waits. There are two connectivity options used for Synchronous In-place Batch Validation:

- **Web Service** – Using **XML over SOAP** (Simple Object Access Protocol), messages are packaged and exchanged. A client application packages up to ten records as an XML request and an XML response is returned to the client application once validation is completed. The client application may request that a stack of alternate addresses be returned if an address could not be validated. Applications that utilize address stacks (or alternate answers) must receive their own CASS certification when using DuoShare for address validation.
W3C Web Services Architecture – <http://www.w3.org/TR/ws-arch/>
SOAP FAQ – <http://jguru.com/faq/SOAP>
Sun Developer Network: Java Technology XML - <http://java.sun.com/xml/>
- **Direct Communication** – A program communicates through an interface broker to send requests. Using CORBA (Common Object Request Broker Architecture) / EJB (Enterprise JavaBean), the client application is able to communicate directly with the DuoShare server to send one to ten addresses for validation. Applications can be written using any programming language. DuoShare provides java client stubs. Applications may also request that a stack of alternate addresses be returned if an address could not be validated. Applications that utilize address stacks (or alternate answers) must receive their own CASS certification when using DuoShare for address validation.
OMG: CORBA Basics - <http://www.omg.org/gettingstarted/corbafaq.htm>
- **Asynchronous In-place Batch Validation**

In Asynchronous In-place Batch Validation, a request does not receive an immediate response. A client application sends a request which is queued with other requests for processing. The client application does not wait for a response and checks for messages later. DuoShare uses the WebSphere MQ platform for asynchronous messaging. There are two connectivity options used for Asynchronous In-place Batch Validation:

- **Web Service** – Using **XML over SOAP** (Simple Object Access Protocol), a client application packages up to ten records as an XML request. MQ queue managers route the message to the proper queues to await validation and retrieval. The client application retrieves the validation responses when ready.
Top XML – <http://www.topxml.com/>
Web Service Resources – <http://webservices.xml.com/>
- **Enterprise Messaging** – A client application submits a request of one to ten records that is placed into a queue to await validation. MQ queue managers ensure that the request is routed to the proper queues. The client application retrieves the validation response when ready.
IBM WebSphere MQ - <http://www-306.ibm.com/software/integration/wmq/>

In-place Batch Validation Steps:

1. Read data from client system.
2. Send request to DuoShare.
3. Retrieve response.
4. Update client system.

Advantages of In-place Batch Validation

- By processing in small batches, updated records are returned to the client in real time, or near real time fashion.
- Validation can be run continuously throughout the month, providing cleaner lists at any point during the month instead of just once-a-month.
- Addresses can be validated without importing and exporting data files.
- Records are persisted at DuoShare to assist with subsequent month incremental validation and audit trail.

Limitations of In-place Batch Validation

- Returned addresses update the existing address immediately without any indication of the changes made to the address, unless the client application maintains history.
- No means of correcting or revalidating addresses prior to the batch being returned and updated in the client application. The client application should store any error that is returned so that bad addresses can be selected and fixed interactively using one of the interactive integrations.
- The time to process an entire list is longer than with Distributed Batch Validation.
- More requirements and IT expertise for the client to prepare and store the data sent and returned.

In-place Batch Validation Records:

A **List** record is created in DuoShare for In-place Batch Validation, containing customer and list information as well as postal data. Use the **List** record to print PS Form 3553 for CASS certification. **List** record information is displayed in the **View List** page.

Address Validation Integration Scenario

The customer determines their schedule for address validation, based on the frequency of updates to DuoShare's postal data and their own address list modifications. New CASS data is obtained monthly and is in production at DuoShare usually by the last day of the preceding month, or within 24 hours of receipt by USPS, with the exception of "Early Warning" data that is available each Thursday after 10 a.m. New Change of Address data is received on Tuesdays by noon and is in production by 3 p.m. Exceptions occur with every USPS holiday and that usually pushes delivery out a day or two.

For the most up-to-date addresses, the customer's entire address file would need to be reprocessed for change of address each week, and partially updated each run via CASS based on Z4Change data and user edits. Every 3 years, the entire file needs to be reprocessed by CASS.

The customer exports addresses to a file using either their program or a DuoShare application. The program waits for the answer file and process the answers before exporting again. DuoShare Directory Agent running at the customer's location detects the file and sends it to DuoShare. Designated users are notified via email of each step in the process.

A field such as "lastAddressValidationTimestamp" is added to the customer's database and is used to determine when an address record should be exported and sent to DuoShare. For example, all records where "Today - lastAddressValidationTimestamp > 30 days" could be chosen to export. The thirty day variable could be reduced to "last hour" or "last minute" to maximize address accuracy.

Normal address modifications and record creations in the customer's system would set lastAddressValidationTimestamp to null in the customer's database, thus causing that address to be included in the next export. Upon successful updating of the address to DuoShare's "answer" fields, then lastAddressValidationTimestamp would be set to the timestamp value returned by DuoShare.

The addresses are merged into the existing list at DuoShare using a primary key supplied by the customer. The addresses are loaded into the "input" fields at DuoShare.

Z4Change is run to pick up existing addresses that need to be re-validated in addition to the addresses just merged. NCOA is run on the entire file each week, and on portions of the file incrementally as needed on each run during the week. While validation processes are running, the customer's users may simultaneously fix bad addresses interactively online at duoshare.com.

The CASS answers are populated into the "answer" fields at DuoShare. Addresses that have been modified are returned to the customer, containing the original "input" along with the "answers." A program written by the customer or DuoShare reads the returned file and sets the customer's address record to the "answer," subject to the following rules:

1. If the "input" still equals what is currently in the customer's database, then the customer may set their address to DuoShare's "answer" fields, and set the lastAddressValidationTimestamp field to the value DuoShare supplies. To analyze problem addresses from within the customer's system, other return codes and messages may be set which DuoShare can return.
2. If the "input" does not equal what is currently in the customer's database, then some user or other process must have made a change in the interim (or there is another problem), and therefore the customer would not update the address with DuoShare's "answer." Since the lastAddressValidationTimestamp field is not updated (or was set to null by a user or other system update), the address will be re-queued during the next processing cycle.

Options to Meet Your Needs

Validation options can be combined to suit your business needs to best utilize address quality for your mailing lists. Clean addresses before they go into your local system using interactive validation, then keep your address list clean using batch validation. With Distributed and In-place Batch Validation options, you can choose which method is right for you.

As markets are identified, DuoShare will be partnering with companies and/or sponsoring projects to enable integration with off-the-shelf applications that have a significant user base. DuoShare will also assist customers with integration projects for custom applications and off-the-shelf applications that do not have a significant user base.

Pre-requisites for using Address Quality Services

In order to use Address Quality Services, a business or an individual registers as a DuoShare customer and provides payment information for billing purposes.

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