



# CLEAN\_Address

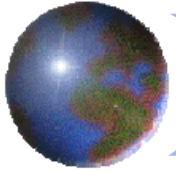


CLEAN\_Address provides integrated data quality solutions for Address, Name, Telephone, and Email data!

Address data for 240 countries and territories!

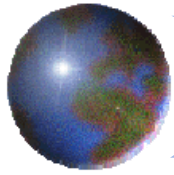
Address Verification in Banner®

Runner Technologies, Inc. – Your Data Quality Partner!



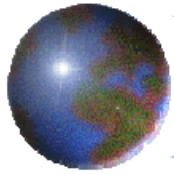
# Introduction

- Overview of Address Verification
- Benefits of Real-time Address Verification
- Live Demos
- Technical discussion of architecture and implementation



## Which Street, City and ZIP are correct?

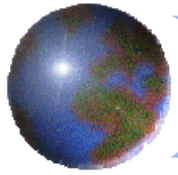
- 6001 broken sound #620
  - 6001 broken sond pkwy unit 620
  - 6001 Nw Broken Sound Pky Apt 620
  - 6001 Broken Sound NW 620
- 
- Bocaraton, FL 33432
  - Bocraton, FL 33487
  - boca rotan, FL 33431
  - boca ratan, FL 33487
- 
- And the winner is...  
**6001 Broken Sound Pkwy NW  
Ste 620  
Boca Raton, FL 33487-2766**



# What's your standard?

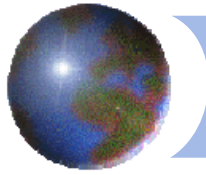
- 1515 N Federal Hwy Ste 305  
Boca Raton, FL 33432-1953
  - 1515 N Federal Hwy  
Ste 305  
Boca Raton, FL 33432-1953
  - STE 305  
1515 N FEDERAL HWY  
BOCA RATON, FL 33432-1953
  - 1515 North Federal Highway  
Suite 305  
Boca Raton, FL 33432
  - 1515 North Federal Hwy Ste 305  
Boca Raton, FL 33432-1953
  - 1515 North Federal Highway Suite 305  
Boca Raton, FL 33432-1953
- All of these standards yield a deliverable address
  - Most donor related organizations prefer (or demand) a “formal” address standard:
    - Spell out street suffix
    - Spell out directional
    - Where does Apt go?
      - Same Line, Above, Below





# Topics of Discussion

- Address Verification Goals
- CLEAN\_Address Overview
- Integration with Banner
- Reporting
- Address Verification Definitions
- Architecture
- Maintenance
- Support
- Pricing

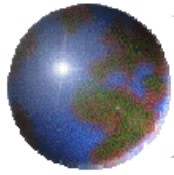


# Address Verification Goals

## - the Benefits

1/2

- Improved data quality for all contact information
  - Addresses
  - Names
  - Telephone Numbers
  - Email Addresses
- Speed up data entry time with fewer errors
- Allow end-user self-service updates on the Web
  - Reduce centralized data entry
- Reduce or eliminate undelivered / returned mail
  - Reduce costs of mailing
  - Faster mail delivery

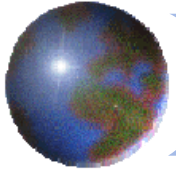


# Address Verification Goals

## - the Solution

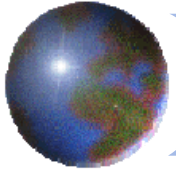
2/2

- 100% integrated complete data quality solution
  - Address, Name, Telephone, Email Verification
  - ZIP Code and County table updates
  - Fully pre-developed and supported solution
    - Minimal installation & integration effort
    - User exits for supporting customizations
- Real-time Seamless Verification in Forms, Self-Service
- Integrated batch verification and reporting
- Support for International Addresses
- Postal data updates are included in subscription
- Institution wide licensing for other 3<sup>rd</sup> party applications



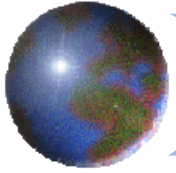
## Who can benefit from improved Data Quality?

- Recruitment / Admissions
- Student Records
- Alumni / Advancement / Foundation
- Human Resources
  - Paycheck and benefits mailings
- Accounts Receivable
  - Valid addresses for credit card transactions
- Accounts Payable
  - Vendor addresses
- Institutional Research



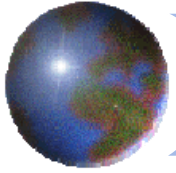
# Why are addresses non-deliverable?

- Address is missing components
  - Apartment number missing
  - Directional missing (N, S, E, W, NE, SE, NW, SW)
  - Street Suffix missing (St, Ave, Blvd, Ln, etc)
- Address has invalid components
  - Incorrect Street Suffix
  - Incorrect Directional
  - House number transposed
- Street name is spelled incorrectly
- Person or Family has moved over 1 year ago



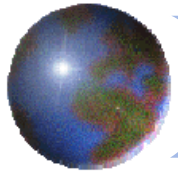
# What is Address Verification?

- The process of taking an address “as-is” and:
  - Determining if it is deliverable or not
  - Correcting it if necessary
  - Standardizing it as needed
  - Returning a valid deliverable address in a consistent format
    - Or providing an address error and suggestion list to help the user provide better input



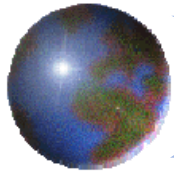
# Name Parsing and Checking

- Parses name components into correct fields
  - First, Middle, Last, Prefix, Suffix
- Capitalizes name components correctly
- Override checkbox to force specific capitalization or parsing
- Identifies misspellings in first name
- Informational Warnings only
- Customize functionality by Name Type



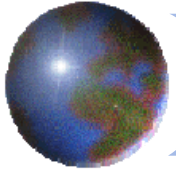
# Telephone Checking

- Checks for a valid Area Code and Prefix
  - NPA NXX - first 6 digits of telephone number
- Inserts missing area codes based on ZIP Code
- Updates based on Area Code splits
- Warns about distance if phone number exceeds a certain distance from Postal Code
  - Suggests alternative Area Code
- Warns if phone number is too long or too short
- Works for US and Canada telephone exchanges
- Customize functionality by Telephone Type



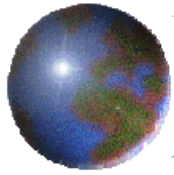
# Email Validation

- Checks email address for valid syntax
- Formats email to lowercase or UPPERCASE
- Performs DNS lookup on domain name for a valid MX record (Mail Exchange)
- Customize functionality by Email Type



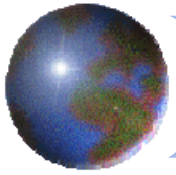
# Real-Time vs. Batch Verification

- On average, databases without address verification will contain 15-22% undeliverable addresses
- Batch Address Verification
  - Can correct a lot of these bad addresses
  - Will identify all of the bad records with a status code
- Real-Time Address Verification
  - Corrects and validates addresses at point of entry
  - Empowers data owner to correct their own address
  - Notifies user of a bad address so they can confirm with the customer (student, employee, vendor)
  - Can reduce 15-22% down toward 0%



# CLEAN\_Address Overview

- CLEAN\_Address is a 100% integrated solution for Address Verification in Banner
  - Real-Time Seamless Integration
    - Banner Forms / INB (Internet Native Banner)
    - Web Self-Service
  - Integrated Batch Verification
- Subscription updates for postal data
- Step-by-step implementation guides



# CLEAN\_Address Integration Approach

## ● Real-Time Seamless Integration

- Address verification is done automatically without user intervention

- User is notified real-time only if address is non-deliverable

- No training is required

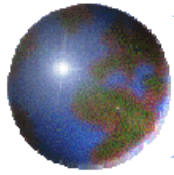
- Banner INB Forms: Item Validation Triggers

- Web Self-Service Portal: AJAX & Transaction Triggers

## ● Integrated Batch Verification

- Addresses are updated directly in the database

- No exporting / importing

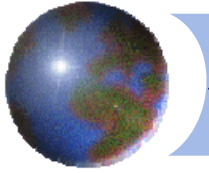


# Banner Forms / INB Support

Support for all address related forms in Banner INB (21 forms total):

GOQCLIB-- Address Form Reference Library supporting:

- |           |   |
|-----------|---|
| - SPAIDEN | -- General Person for Student           |
| - PPAIDEN | -- General Person for HR / Personnel    |
| - APAIDEN | -- General Person for Alumni            |
| - FOAIDEN | -- General Person for Finance           |
| - FTMVEND | -- Vendor Maintenance                   |
| - FTMAGCY | -- Agency for Finance                   |
| - FTMCUST | -- Customer Maintenance Form            |
| - FTMFMGR | -- Financial Manager Detail             |
| - SPAEMRG | -- Emergency Contact Form               |
| - SAAQUIK | -- Quick Admissions                     |
| - SRAQUIK | -- Quick Recruit                        |
| - APAEHIS | -- Employment History Form              |
| - GOAEMAL | -- Email Maintenance Form               |
| APAERVW   | -- Employer Review Form                 |
| PEA1PAY   | -- One-Time Payment and Quick hire      |
| SAAETBL   | -- Admissions                           |
| SHADIPL   | -- Diploma Address                      |
| SHARQTC   | -- Transcript Request                   |
| GOAMTCH   | -- Address Matching Form                |
| SOASBGI   | -- High School / College Code Address   |
| GOAADDR   | -- Address Review and Verification Form |

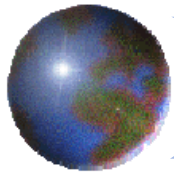


# Banner Forms / INB Integration

- 2 Banner INB Forms integration approaches are supported:
  - Pre-integrated Banner INB forms for your specific Banner version and patch level

-or-

  - Simple 4-Step process using integration guides
    1. Open form
    2. Add two (2) Datablock Items
    3. Copy-Paste Verify Address Procedure
    4. Copy-Paste When-Validate-Item trigger
- Banner 7/8 – changes are done primarily in a single Form reference library: (GOQCLIB.FMB)



# Banner Forms Integration

- Integration into existing Banner Forms
- No client software to install or maintain

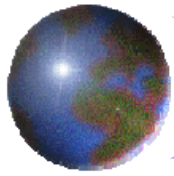
**Seamless: User is not notified unless there is an issue**

Field	Raw Input	Processed Output
From Date:	28-JAN-2008	28-JAN-2008
Address Type:	AL <input type="checkbox"/> Alumni	AL <input type="checkbox"/> Alumni
Sequence Number:	<input type="checkbox"/>	<input type="checkbox"/>
Street Line 1:	1515 n federal	1515 North Federal Highway
Street Line 2:		Suite 305
Street Line 3:	#305	
City:	bocraton	Boca Raton
State or Province:	FL <input type="checkbox"/>	FL <input type="checkbox"/> Florida
ZIP or Postal Code:		33432-1953
County:		FL099 <input type="checkbox"/> FL-Palm Beach

**Address type specific rules (spell out street suffix)**

**ZIP and ZIP+4 added automatically**

**County accurate to house number level**



# Error Messages and Suggestion Lists

- Users are only notified when there is an error

The screenshot shows the Oracle SPAIDEN - General Person for Student form. The 'Address' tab is active. The form contains the following fields and values:

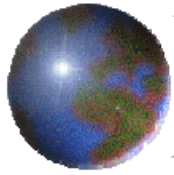
Field	Value
From Date:	28-JAN-2008
To Date:	
Address Type:	PR Primary
Sequence Number:	
Street Line 1:	1515 federal
Street Line 2:	
Street Line 3:	
City:	boca raton
State or Province:	FL
ZIP or Postal Code:	
County:	

An error message dialog box is displayed over the form. It features a red alarm bell icon and the following text:

Multiple Matches  
Suggestions:  
1515 N Federal Hwy  
1515 S Federal Hwy  
Atrium Plaza 1515 N Federal Hwy  
Star National Executive Suites 1515

The dialog box has 'OK' and 'Cancel' buttons at the bottom.

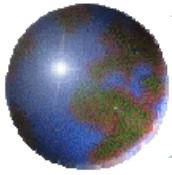
Suggestion List provides correction possibilities based on address error



# Banner Web Self-Service Support

CLEAN\_Address supports all Banner Web Self-Service interfaces.

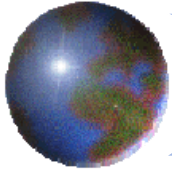
- **Web Self-Service Modules:**
  - Admissions
    - Student and Parent Address
  - Prospect
    - Student, Parent, High School, College Addresses
  - Student / HR / Finance / Alumni
  - Emergency Contact
  - Transcript Request
- **Two interface approaches:**
  - AJAX for instantaneous real-time verification
  - Transaction level for back-end real-time verification



# Batch Address Verification

- PL/SQL Procedures for Batch updates of existing address records
  - Addresses are updated “in-place” in the database without exporting or importing
- The following 11 Banner tables are supported:

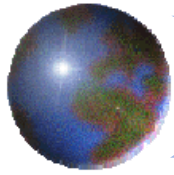
SPRADDR	-- Student / HR / Finance / Alumni Address Table
SARADDR	-- Electronics Admission Address Table
SPREMGR	-- Emergency Contact Address Table
SHTTRAN	-- Transcript Request Table
SHBDIPL	-- Diploma Address Table
SPTADDR	-- Temporary SPRADDR Table
ROTADDR	-- Financial Aid Temporary SPRADDR Table
SRTADDR	-- Electronic Prospect Address Table loaded from search and test score tapes, or entered on Web for Prospects
SOBSBGI	-- College Code Address Table
SRTHSCH	-- High School Address Table
SRTPCOL	-- Prior College Address Table



# Batch Verification Procedure

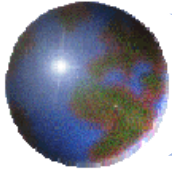
```

/*****
*   Procedure Name   :   Batch_Verify_SPRADDR
*
*   Description      :   Batch Verify the addresses in the Banner Student Address table (SPRADDR)
*       * fn_max_verify
*           - maximum number of address to verify
*       * fb_update
*           - TRUE  = update the record and show results
*           - FALSE = don't update, only show results
*       * fb_only_unverified
*           - TRUE  = Only update unverified records
*           - FALSE = Update ALL records
*       * fv_address_type
*           - Banner Address Type - only verify this type
*           - NULL = to verify all address types
*       * fn_days_back
*           - Verify Addresses that were updated/created this many days back
*           - Note: You can enter fractional days such as 0.25, 0.5, etc
*           - NULL = all addresses
*       * fb_skip_international
*           - Skip international address verification in batch mode
*       * fb_verify_inactive
*           - Verify inactive addresses as well as active ones
*           - This essentially ignores the "to date" and status indicator on the record
*       * fd_from_date / fd_to_date
*           - Specify a date range for the verification based on SPRADDR_ACTIVITY_DATE
*           - This is useful for segmenting the data to create parallel batch procedures,
*             increasing throughput
*****/
PROCEDURE Batch_Verify_SPRADDR (
    fn_max_verify          IN          NUMBER          DEFAULT 3000000
    ,fb_update             IN          BOOLEAN         DEFAULT TRUE
    ,fb_only_unverified    IN          BOOLEAN         DEFAULT TRUE
    ,fv_address_type       IN          VARCHAR2        DEFAULT NULL /* SPRADDR_ATYP_CODE */
    ,fn_days_back          IN          NUMBER          DEFAULT NULL
    ,fb_skip_international IN          BOOLEAN         DEFAULT TRUE
    ,fb_verify_inactive    IN          BOOLEAN         DEFAULT FALSE
    ,fd_from_date          IN          DATE            DEFAULT NULL
    ,fd_to_date            IN          DATE            DEFAULT NULL
);
```



# Reporting

- Several standard reports are supplied with the CLEAN\_Address for Banner solution:
  - Address Error Summary
    - shows a summary of all address errors
  - Address Error Detail
    - shows the detail of all addresses with deliverability errors
  - Duplicate Addresses
    - shows duplicate addresses after all records have been standardized
  - Compare Address Changes
    - shows before and after addresses after a batch verification
  - Radius Search
    - shows all students within a specified radius of the institution



# Address Error Summary Reports

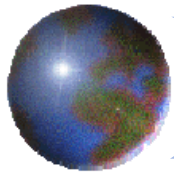
Error Summary Report from Batch Verify procedure without updates:

```
SQL> exec CLEAN_Address_Banner.Batch_Verify_SPRADDR();

-----
-- ADDRESS ERROR SUMMARY --
-----
Code          Description                                     Count
-----
.             No Error                                           449
U             Unknown Street                                     16
R             Range Error                                         9
N1           Suite/Apt Missing                                   5
CC           Suite/Apt Invalid                                   12
M3           Street Number Invalid                               7
M            Multiple Matches                                    1
Z            Invalid ZIP/Postal Code                             1
-----
Total:                                             500
```

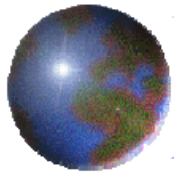
SQL Reports for Address Error Summary and Detail "after" a batch update:

	Err	Error_Desc	Count
▶ 1	CC	Suite/Apt Invalid	15
2	M	Multiple Matches	1
3	M3	Street Number Invalid	10
4	N1	Suite/Apt Missing	8
5	R	Address out of Range	10
6	U	Unknown Street	20
7	Z	ZIP Code Error	1



# Compare Address Changes Report

	Pkey	Rec	Type_of_Change	Line1	Line2	Line	City	St	Zip	County	ERROR	DP	CHK	CRRT
31	10014PR1	...	OLD	1099 Berkley	...	...	Pontiac	MI	48341					
▶ 32	10014PR1	...	NEW	Addr1 Cnty	1099 Berkley Ave	...	Pontiac	MI	48341-2309	26125		99	8	C069
33	10015PR1	...	OLD	1099 Camellia Place	...	...	Fox River Grove	IL	600211348					
34	10015PR1	...	NEW	Addr1 Cnty	1099 Camellia Pl	...	Fox River Grove	IL	60021-1348	17097		99	7	C001
35	10016PR1	...	OLD	1099 Collingwood Dr	...	...	Naperville	IL	60540-8306					
36	10016PR1	...	NEW	Cnty	1099 Collingwood Dr	...	Naperville	IL	60540-8306	17043		99	0	C034
37	10017PR1	...	OLD	1099 Covington Dr	...	...	Lemont	IL	604398565					
38	10017PR1	...	NEW	Cnty	1099 Covington Dr	...	Lemont	IL	60439-8565	17031		99	6	R014
39	10018PR1	...	OLD	1099 Cranbrook Dr	...	...	Schaumburg	IL	601933728					
40	10018PR1	...	NEW	Cnty	1099 Cranbrook Dr	...	Schaumburg	IL	60193-3728	17031		99	3	C024
41	10019PR1	...	OLD	1099 Grayton	...	...	Grosse Pointe Park	MI	48230					
42	10019PR1	...	NEW	Addr1 Cnty	1099 Grayton St	...	Grosse Pointe Park	MI	48230-1424	26163		99	4	C052
43	1001PR1	...	OLD	1000 Lakeside Drive	APT 378	...	Athens	GA	30605					
44	1001PR1	...	NEW	Addr1 Addr2 Cnty	1000 Lakeside Dr Apt 378	...	Athens	GA	30605-6914	13059		78	1	C070
45	10020PR1	...	OLD	1099 Hwy 113	...	...	White Pine	TN	378904115					
46	10020PR1	...	NEW	Addr1 Cnty	1099 Highway 113	...	White Pine	TN	37890-4115	47089		99	4	R001
47	10021PR1	...	OLD	1099 N Orchard Circle 17	...	...	Collierville	TN	38017					
48	10021PR1	...	NEW	Addr1 Cnty	1099 Orchard Cir N Apt 17	...	Collierville	TN	38017-3160	47157	Suite/Apt Invalid	99	3	R009
49	10022PR1	...	OLD	1099 Winter Ln	...	...	Tallahassee	FL	323111268					
50	10022PR1	...	NEW	Cnty	1099 Winter Ln	...	Tallahassee	FL	32311-1268	12073		99	5	R071
51	10023PR1	...	OLD	10996 Cedar Creek Rd	...	...	Cedarburg	WI	530128868					
52	10023PR1	...	NEW	Cnty	10996 Cedar Creek Rd	...	Cedarburg	WI	53012-8868	55131		96	4	R001
53	10024PR1	...	OLD	10997 87th Ave	...	...	Seminole	FL	33772					
54	10024PR1	...	NEW	Cnty	10997 87th Ave	...	Seminole	FL	33772-3814	12103		97	6	C047
55	10025PR1	...	OLD	10998 Clara Barton Drive	...	...	Fairfax Station	VA	22039					
56	10025PR1	...	NEW	Addr1 Cnty	10998 Clara Barton Dr	...	Fairfax Station	VA	22039-1431	51059		98	8	R071
57	10026PR1	...	OLD	10998 Springmill Ln	...	...	Carmel	IN	46032-8865					
58	10026PR1	...	NEW	Cnty	10998 Springmill Ln	...	Carmel	IN	46032-8865	18057		98	1	R002
59	10027PR1	...	OLD	10999 IH 10 West Ste 400	...	...	San Antonio	TX	78230					
60	10027PR1	...	NEW	Addr1 Cnty	10999 W Ih 10 Ste 400	...	San Antonio	TX	78230-1694	48029		0	0	C027
61	10028PR1	...	OLD	109e,4th St,Apt 11	...	...	Moscow	ID	83843					
62	10028PR1	...	NEW	Addr1 Cnty	109E,4th St,Apt 11	...	Moscow	ID	83843	16057	Multiple Matches			
63	10029PR1	...	OLD	10B Agriculture Hall	...	...	East Lansing	MI	48824-1039					
64	10029PR1	...	NEW	Cnty	10B Agriculture Hall	...	East Lansing	MI	48824-1039	26065	Street Number Invalid	10	0	C050



# Radius Search Report

```

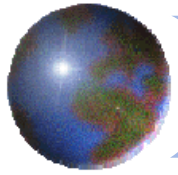
select spraddr_city          "City"
, spraddr_stat_code         "State"
, spraddr_zip               "ZIP"
, dest.latitude             "Lat"
, -1*abs(dest.longitude)    "Long"
, round(CLEAN_Address.Get_Distance(
        src.latitude, -1*abs(src.longitude)
        , dest.latitude, -1*abs(dest.longitude)), 2)  "Miles"
, CLEAN_Address.Get_Directional(CLEAN_Address.Get_Bearing(
        src.latitude, -1*abs(src.longitude)
        , dest.latitude, -1*abs(dest.longitude)))  "Direction"

from spraddr s
, cln_postal_codes src
, cln_postal_codes dest
where src.postal_code = '90045' -- Stationary Location
and src.country_code='US' and dest.country_code='US'
and substr(spraddr_ZIP,1,5) = dest.postal_code
and CLEAN_Address.Get_Distance(src.latitude, -1*abs(src.longitude)
        , dest.latitude, -1*abs(dest.longitude)
        ) <= 20 -- Within this many miles

order by "Miles"

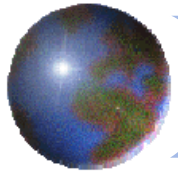
```

	City	State	ZIP	Lat	Long	Miles	Direction
▶ 82	Inglewood	CA	90301-3030	33.9564	-118.3546	2.2	E
83	Inglewood	CA	90301-3030	33.9564	-118.3546	2.2	E
84	Inglewood	CA	90301-3030	33.9564	-118.3546	2.2	E
85	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
86	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
87	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
88	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
89	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
90	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
91	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
92	Culver City	CA	90230-5476	33.9952	-118.3956	2.45	N
93	Culver City	CA	90231-2704	33.9965	-118.3973	2.55	N
94	Culver City	CA	90231-2704	33.9965	-118.3973	2.55	N



# Address Verification Definitions 1/2

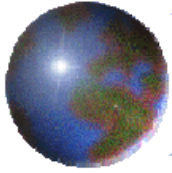
- CASS – Coding Accuracy Support System
  - USPS Certification for a software program used for cleaning up, correcting, and standardizing an address
  - Ensures address is corrected to USPS guidelines
  - Prerequisite to Presorting for postage rate discounts
- DPV – Delivery Point Validation
  - Identifies non-deliverable house numbers
  - Identifies missing and invalid apartment numbers
- LACSLink<sup>™</sup> - Locatable Address Correction Service
  - Option included with DPV – provides remapping of addresses from Route/Box notation to physical street



# Address Verification Definitions 2/2

## ● GeoCoding

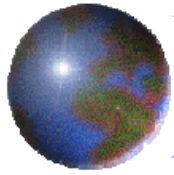
- Identifies the Latitude and Longitude coordinates for an address
- Used to compute distance, direction, and perform radial searches
  - How many students live within 5 miles, 10 miles of the university?
  - How many alumni live within 50 miles of an event?
- Several levels
  - 5-digit ZIP Code level (included with basic suite)
  - 9-digit ZIP+4 level (GeoCoder Option)
  - Near roof-top level (GeoPoints Option)



# Change of Address Processing

Effective way to locate lost individuals and be proactive as they move!

- **NCOA<sup>Link™</sup> – National Change Of Addres**
  - USPS change of address processing for residential and business
  - **4 Years** back
  - USPS Statistic: 18-20% of the U.S. moves every year
  - Pre-built interfaces for exporting / importing / reporting
- **mCOA – Multi-Source Change Of Addres**
  - Collection of address changes compiled from several sources:
    - credit card companies, banks, magazine subscriptions, catalog houses, insurance groups, and utility companies
  - **5 Years** back
- **CCOA – Canadian Change Of Addres**
  - Canadian Change of Address processing for individuals, families, and businesses
  - **3 Years** back



# List Enhancement Options

## ● Telephone Append

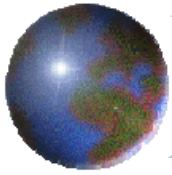
- Adds phone numbers to your records based on the provided name and address
- Uses a consumer information database covering 90% of the households in the US
- All lists are matched against the National Do-Not-Call registry and applicable state Do-Not-Call lists
- However, if your organization is exempt from these laws you can specify "Exempt" at the time of order
- The pricing structure only charges you for hits (rather than for total number of records)

## ● Email Append

- Add residential email addresses to your records
- Email addresses are linked to the provided name and postal address based on detailed information from a large network of vendors
- Sources: Opt-in permission-based websites, online and offline survey data, online and offline product registrations
- Sends email to recipient with organization's message and recipient can opt out

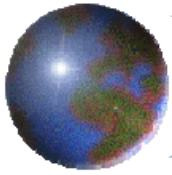
## ● Deceased Identification

## ● Inmate Identification

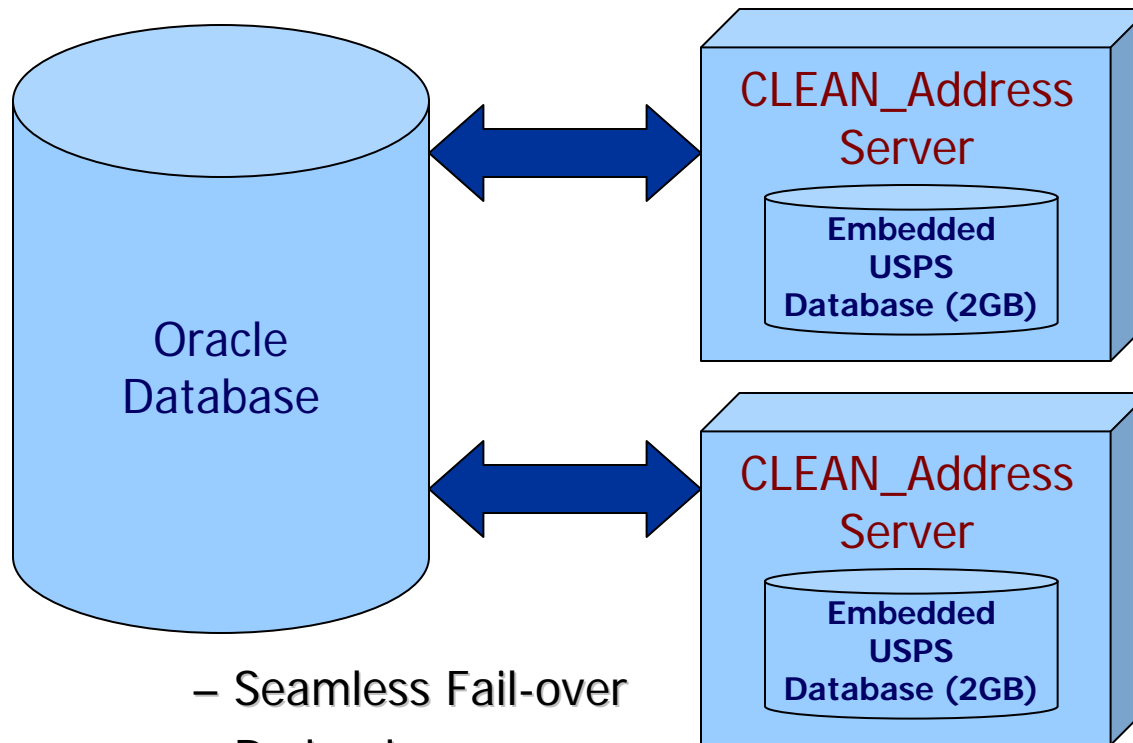


# CLEAN\_Address Architecture

- CLEAN\_Address has an Enterprise Service Oriented Architecture (SOA)
  - CLEAN\_Address server connects to database on back-end
  - Clients do not connect to CLEAN\_Address server directly
- Enterprise Architecture
  - Seamless Fail-over
  - Redundancy
  - Load Balancing
  - Scalability
  - Oracle RAC (Real Application Clusters)
- Service Oriented Architecture (SOA)
  - Multiple databases can be supported from a single CLEAN\_Address server installation
  - I.e. Development, Test, Production



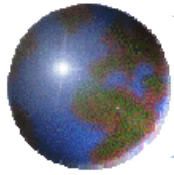
# Enterprise Architecture



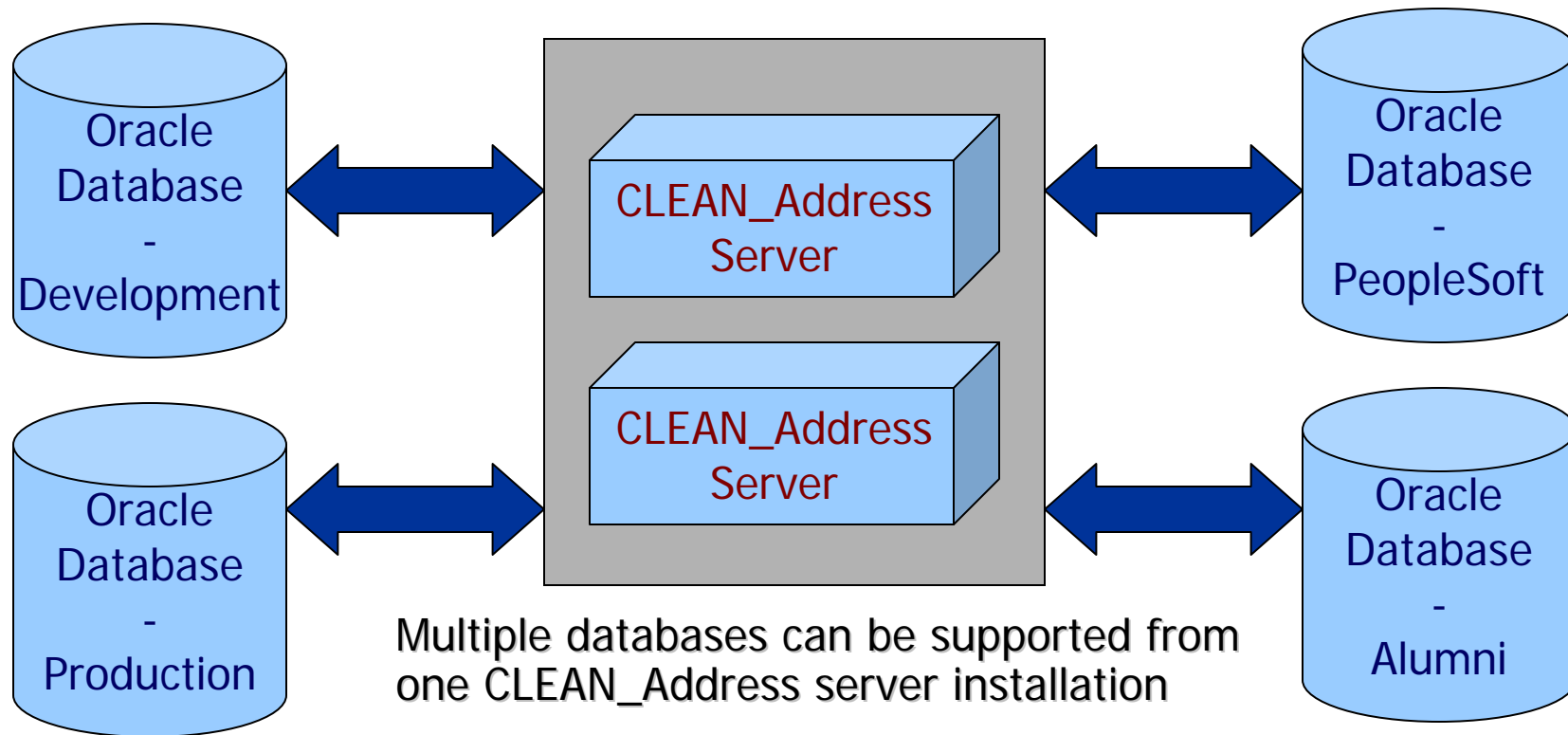
- Seamless Fail-over
- Redundancy
- Load Balancing
- Scalability
- 100% Availability

## O/S Platforms:

- Windows
- Linux
- Solaris
- AIX
- HP-UX

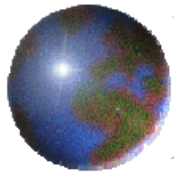


# Service Oriented Architecture (SOA)

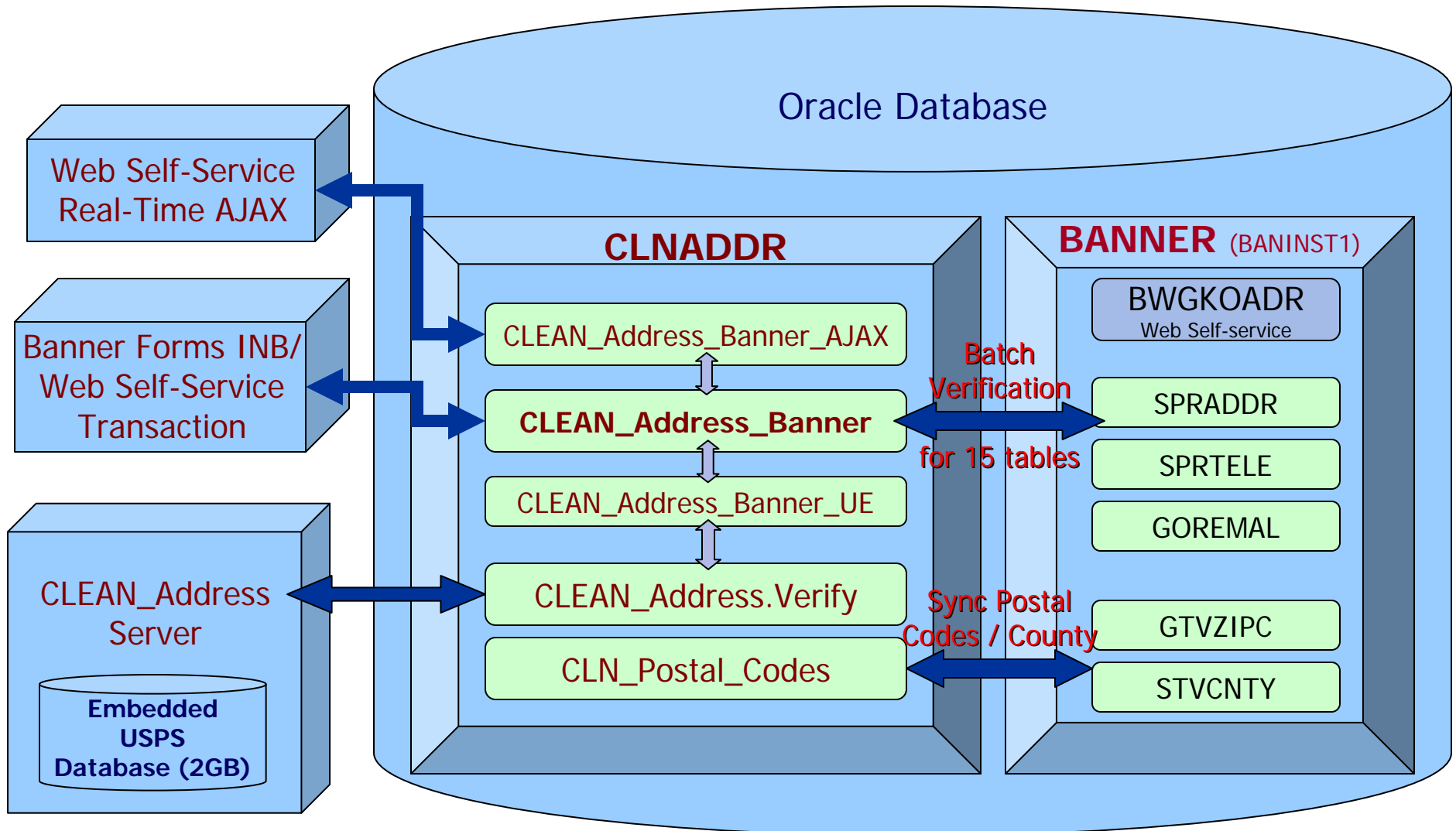


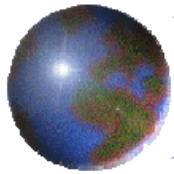
Multiple databases can be supported from one CLEAN\_Address server installation

- Address Verification Servers supply a service to any Oracle database that needs them
- USPS data is updated centrally on the CLEAN\_Address server every 2 months

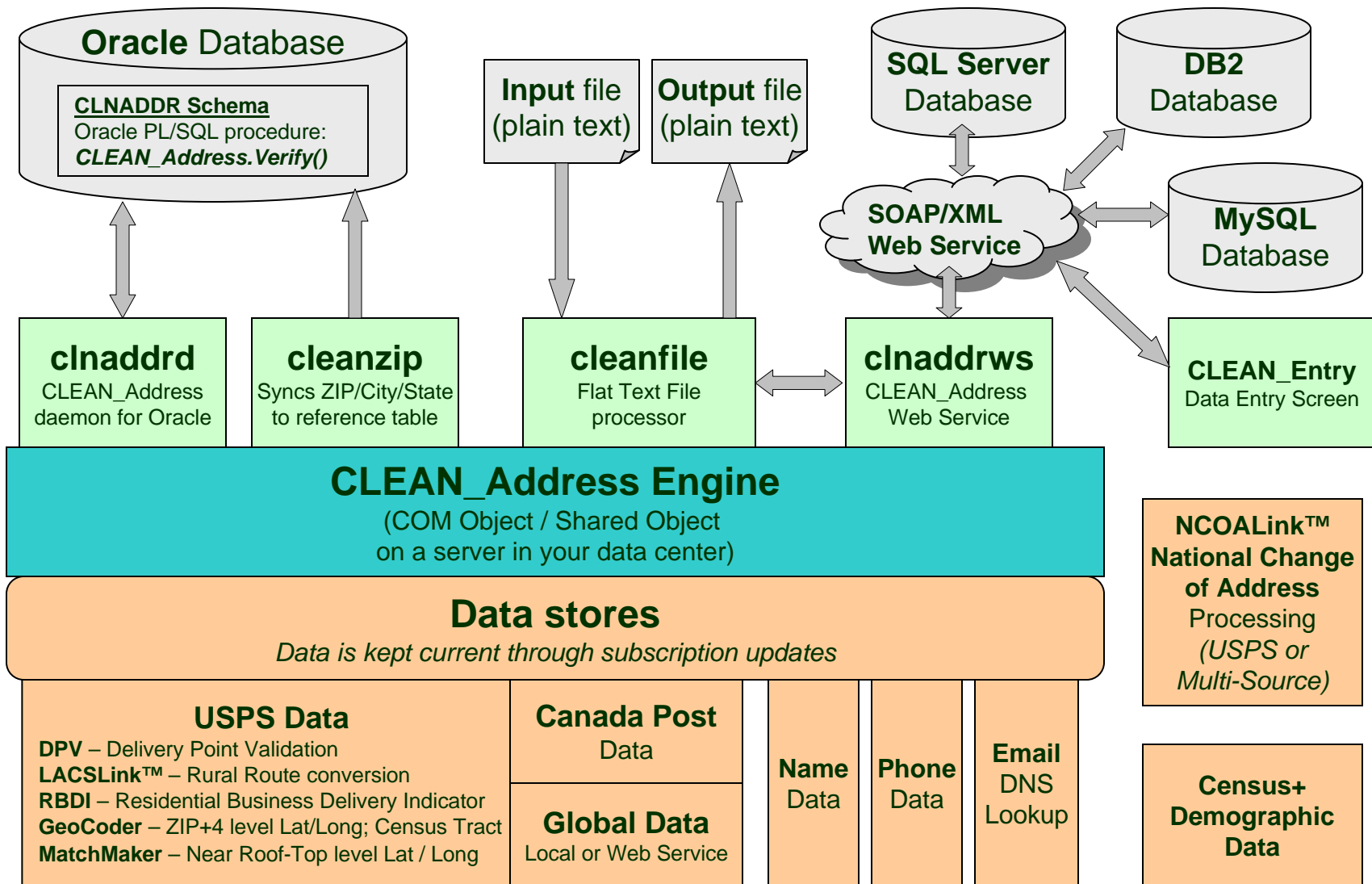


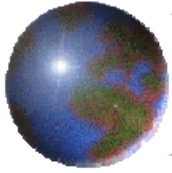
# Database Architecture





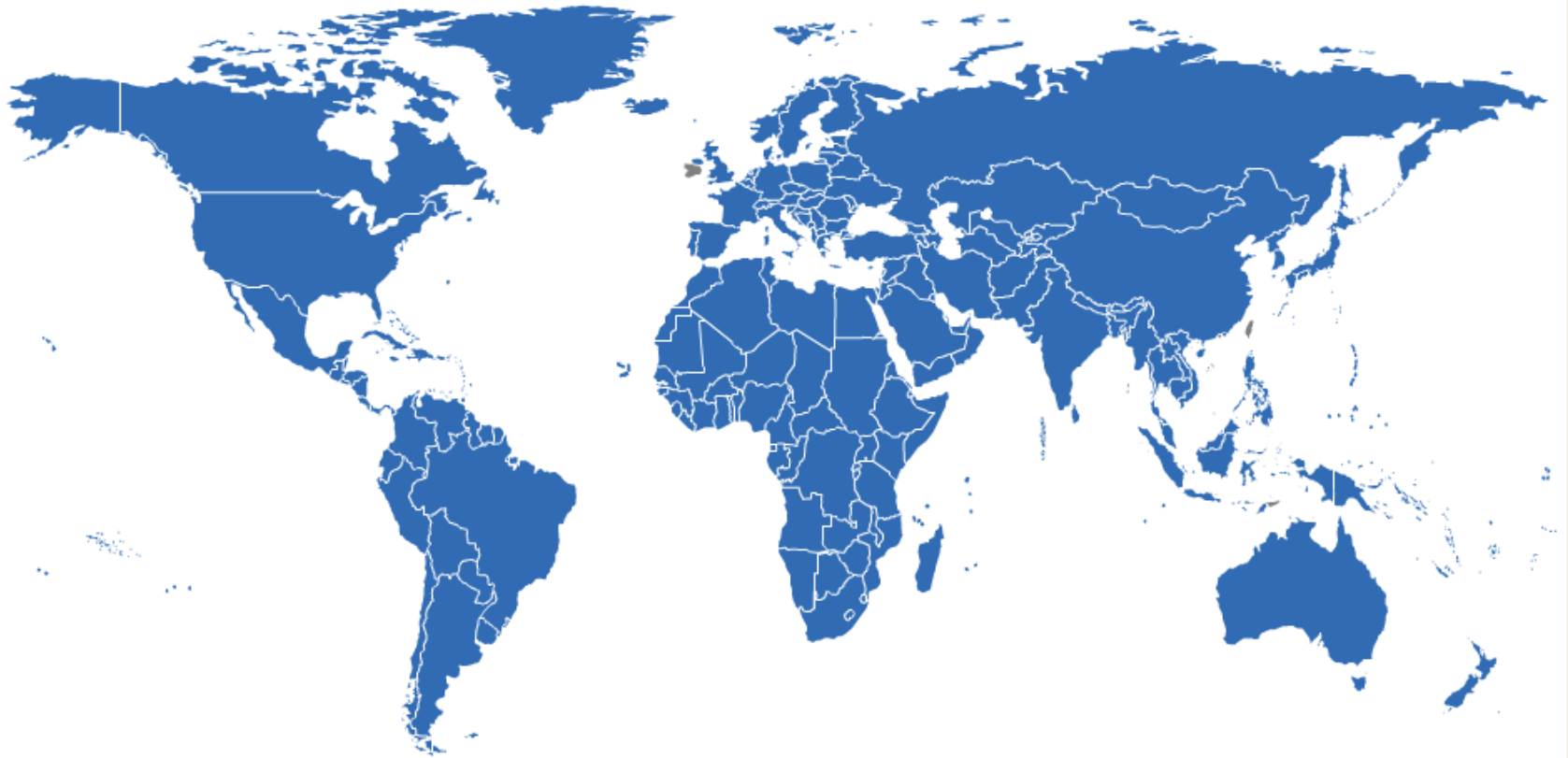
# CLEAN\_Address Suite Architecture

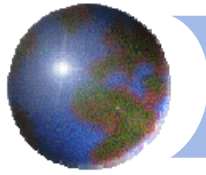




# International Address Verification

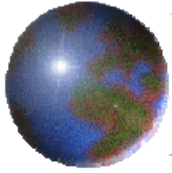
● Supports 240 Countries and Territories





# International Country List

Afghanistan	Cambodia	France	Jordan	Montserrat	Saint Helena	Syrian Arab Republic
Åland Islands	Cameroon	French Guiana	Kazakhstan	Morocco	Saint Kitts and Nevis	Taiwan
Albania	Canada	French Polynesia	Kenya	Mozambique	Saint Lucia	Tajikistan
Algeria	Cape Verde	French Southern Territories	Kiribati	Myanmar	Saint Pierre and Miquelon	Tanzania, United Republic of
American Samoa	Cayman Islands	Gabon	Korea, Democratic People's Republic of	Namibia	Saint Vincent and the Grenadines	Thailand
Andorra	Central African Rep.	Gambia	Korea, Republic of	Nauru	Samoa	Timor-Leste
Angola	Chad	Georgia	Kuwait	Nepal	San Marino	Togo
Anguilla	Chile	Germany	Kyrgyzstan	Netherlands	Sao Tome and Principe	Tokelau
Antarctica	China	Ghana	Lao, People's Dem. Rep.	Netherlands Antilles	Saudi Arabia	Tonga
Antigua and Barbuda	Christmas Island	Gibraltar	Latvia	New Caledonia	Senegal	Trinidad and Tobago
Argentina	Cocos Islands	Greece	Lebanon	New Zealand	Serbia and Montenegro	Tunisia
Armenia	Colombia	Greenland	Lesotho	Nicaragua	Sierra Leone	Turkey
Aruba	Comoros	Grenada	Liberia	Niger	Singapore	Turkmenistan
Australia	Congo	Guadeloupe	Libyan Arab Jamahiriya	Nigeria	Slovakia	Turks and Caicos Islands
Austria	Congo, Dem. Rep.	Guam	Liechtenstein	Niue	Slovenia	Tuvalu
Azerbaijan	Cook Islands	Guatemala	Lithuania	Norfolk Island	Solomon Islands	Uganda
Bahamas	Costa Rica	Guinea	Luxembourg	Northern Mariana Islands	Somalia	Ukraine
Bahrain	Côte d'Ivoire	Guinea-Bissau	Macau	Norway	South Africa	United Arab Emirates
Bangladesh	Croatia	Guyana	Macedonia	Oman	South Georgia and the South Sandwich Islands	United Kingdom
Barbados	Cuba	Haiti	Madagascar	Pakistan	Spain	United States
Belarus	Cyprus	Heard Island & McDonald Islands	Malawi	Palau	Sri Lanka	United States Minor Outlying Islands
Belgium	Czech Republic	Holy See	Malaysia	Palestinian Territory	Sudan	Uruguay
Belize	Denmark	Honduras	Maldives	Panama	Suriname	Uzbekistan
Benin	Djibouti	Hong Kong	Mali	Papua New Guinea	Svalbard and Jan Mayen	Vanuatu
Bermuda	Dominica	Hungary	Malta	Paraguay	Swaziland	Venezuela
Bhutan	Dominican Republic	Iceland	Marshall Islands	Peru	Sweden	Viet Nam
Bolivia	Ecuador	India	Martinique	Philippines	Switzerland	Virgin Islands, British
Bosnia and Herzegovina	Egypt	Indonesia	Mauritania	Pitcairn		Virgin Islands, U.S.
Botswana	El Salvador	Iran, Islamic Republic of	Mauritius	Poland		Wallis and Futuna
Bouvet Island	Equatorial Guinea	Iraq	Mayotte	Portugal		Western Sahara
Brazil	Eritrea	Ireland	Mexico	Puerto Rico		Yemen
British Indian Ocean Territory	Estonia	Israel	Micronesia, Fed. States	Qatar		Zambia
Brunei Darussalam	Ethiopia	Italy	Moldova, Republic of	Réunion		Zimbabwe
Bulgaria	Falkland Islands	Jamaica	Monaco	Romania		
Burkina Faso	Faroe Islands	Japan	Mongolia	Russian Federation		
Burundi	Fiji			Rwanda		
	Finland					



# User Exit Package

- A User Exit package is supplied to support customizations of business rules

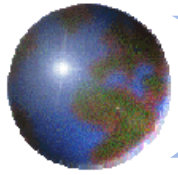
## CLEAN\_Address\_Banner\_UE

### Pre\_Address\_Verify:

```
-- Don't verify Campus Addresses (CA) or Dorm Rooms (DM)
if upper(fv_address_type) in ('CA', 'DM') then
    fb_verified := TRUE;
end if;
```

### Post\_Address\_Verify:

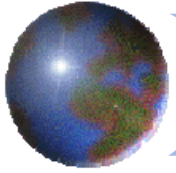
```
-- Use different rules for Alumni (AL) addresses
if upper(fv_address_type) in ('AL') then
    -- Expand street suffix
    CLEAN_Address_Banner.Set_Expand_Street_Suffix(TRUE);
    -- Expand the street directional N S E W -> North, South, East, West, etc.
    CLEAN_Address.Expand_Street_Directional(f_address_rec.address_line_1, 30);
    CLEAN_Address.Expand_Street_Directional(f_address_rec.address_line_2, 30);
    CLEAN_Address.Expand_Street_Directional(f_address_rec.address_line_3, 30);
    CLEAN_Address.Expand_Street_Directional(f_address_rec.address, 30);
    -- Try to put apt on same line as street, or on the line after if it doesn't fit
    CLEAN_Address_Banner.Set_Suite_Apt_Before_Street(FALSE);
    CLEAN_Address_Banner.Set_Append_Suite_To_Street(TRUE);
end if;
```



# CLEAN\_Address

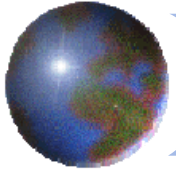
## Integration with Banner

- CLEAN\_Address provides several integration components for Banner
  - **Batch** Address Verification for 11 address tables
  - **Real-time Banner Forms (INB)** integration for 21 Banner Forms
  - **Real-time Web Self-Service** integration for 5 Web Self-Service processes
  - **Open PL/SQL interface** for non-Banner systems (PeopleSoft, SAP, Oracle, custom)
    - Enables real-time and batch verification in any application that uses an Oracle database
  - **Flat Text file** batch address verification (CLEANFile)



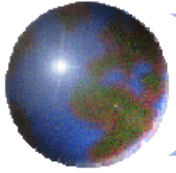
# CLEAN\_Address\_Banner Package 1/2

- PL/SQL stored package in the database
- Integration code between Banner and CLEAN\_Address package
- Contains several procedures:
  - Batch Address Verification
  - Real-Time Address Verification APIs
    - Used for integrating into Forms and Web Self-Service
  - Batch / Real-time Telephone Verification
  - ZIP Code and County table synchronization
  - Error code description and help



# CLEAN\_Address\_Banner Package 2/2

- Enforces the Banner Address “rules”
  - All business rules are stored centrally in this package
  - Pre- and Post- Verification User Exits for custom rules
  - Optional parameters – expand street suffix
  - 30 character Street limitation
  - 20 character City limitation
  - Puts apartment on same line as address
  - Assigns correct county code
  - Appends ZIP+4 to ZIP Code
  - Stores verification date and address error code

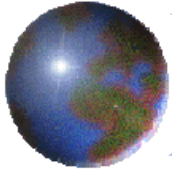


# County Code Considerations

- CLEAN\_Address can support County codes of any format
  - 5-digit FIPS County Codes
  - 2-char State + 3-digit FIPS County Code
  - 3-digit FIPS County Codes (single state)
  - Custom county codes with name variations (Reverse Lookup from name)

Example:

12099	- Palm Beach	- FIPS
FL099	- Palm Beach	- Alpha FIPS
099	- Palm Beach	- Single State 3-digit FIPS
123	- Palm Beach	- Single State custom county code

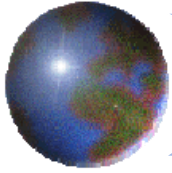


# Using your own County Codes

- Create User Exit for reverse lookup of County code based on name:

```
PROCEDURE Post_Address_Verify (
    f_address_rec          IN OUT CLEAN_Address.Address_rec
    ,fv_plsql_error        IN OUT VARCHAR2
    ,fv_address_type       IN   VARCHAR2
    ,fb_verified           IN OUT BOOLEAN
)
IS
-- Cursor to get the specified county code from the county name instead of FIPS value
cursor c_county (p_county VARCHAR2) IS
select stvnty_code
from   stvnty
where  stvnty_desc = decode(p_county
    -- Map Exception Counties to local Values
    -----
    -- FIPS County Name      Local County Name
    -----
    , 'Cimarron' ,      'Cimaron'
    , 'Le Flore' ,      'LeFlore'
    , 'Pontotoc' ,      'Ponotoc'
    , p_county
    );

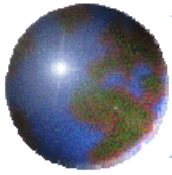
BEGIN
--
-- County Rule -- Reverse Lookup county code for non-FIPS county codes
--
if f_address_rec.state IN ('TN') then
open c_county(f_address_rec.county_name);
fetch c_county
into f_address_rec.county_code;
if c_county%NOTFOUND then
f_address_rec.county_code := NULL;
end if;
close c_county;
else
f_address_rec.county_code := NULL;
f_address_rec.county_name := NULL;
end if;
```



# Not Syncing County Codes

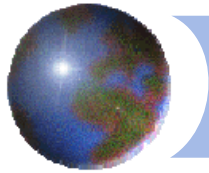
- Used if you have your own county code mappings and don't want to adopt the FIPS standard
- Only sync the ZIP Codes (GTVZIPC), not Counties (STVCNTY)

```
BEGIN
  CLEAN_Address_Banner.Sync_Postal_Codes(
    fb_sync_county          => FALSE /* STVCNTY */
    ,fb_sync_postal_codes  => TRUE  /* GTVZIPC */
    ,fv_state               => NULL  /* Specific state to sync for County Codes */
    ,fb_set_county_for_postal => FALSE /* Populate county on GTVZIPC */
  );
END;
/
```



# Maintenance

- A bimonthly subscription service keeps the USPS data updated every 2 months
  - A monthly subscription option is also available
- About 2 GB of USPS data is shipped on 3 CDs
- Zero downtime when applying updates
- Existing address records should be verified at least every 6 months using the Banner batch address verification procedures
  - ZIP Codes, ZIP+4, and street names can change periodically

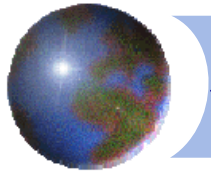


# Free Technical Support

- 9am-6pm EST Mon-Fri
- 24-Hour Emergency Support Pager

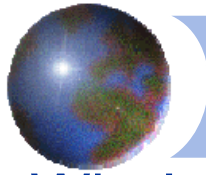
## Support Methods:

- Phone: 561-395-9322 / 877-784-0003
- Email: [support@RunnerTechnologies.com](mailto:support@RunnerTechnologies.com)
- Web: [www.RunnerTechnologies.com](http://www.RunnerTechnologies.com)
  - Support Page
  - FAQ Pages
- Newsgroup: CLEAN\_Address newsgroups  
- sign up from our Web site



# Pricing

- Based on student FTE headcount plus options
  - Delivery Point Validation (DPV) & LACSLink included
  - Choice of O/S platform included
    - Windows / Linux / Solaris / AIX / HP-UX (32-bit/64-bit)
  - Options:
    - GeoCoder, Demographic Data, Mailers+4
    - International Address Verification – 240 Countries & Territories
- Includes 6 bimonthly subscription updates
  - Monthly subscription option is available
- Includes FREE technical support and maintenance, with 24-hour emergency support
- Includes all Banner Batch and Real-time interface packages and support



# Who's using CLEAN\_Address?

Over 500 colleges and universities,

Over 100 federal/county/state/city government, private sector companies

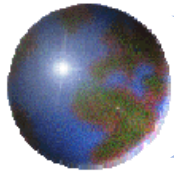
- Albany State University - Albany, GA
- Angelo State University - San Angelo, TX
- Appalachian State University - Boone, NC
- Auburn University - Auburn, AL
- Austin Peay State University - Clarksville, TN
- Baylor University - Waco, TX
- Chattanooga State Technical Community College - TN
- Chemeketa Community College - Salem, OR
- Clovis Community College - Clovis, NM
- Coast Community College District - Costa Mesa, CA
- College of St. Catherine - Saint Paul, MN
- College of William and Mary - Williamsburg, VA
- Columbia State Community College - Columbia, TN
- Columbus State University - Columbus, GA
- Concordia University - Portland - Portland, OR
- Concordia University Chicago - River Forest, IL
- Cuesta College - San Luis Obispo, CA
- Des Moines Area Community College - Ankeny, IA
- East Tennessee State University - Johnson City, TN
- Eastern Michigan University - Ypsilanti, MI
- Eckerd College - Saint Petersburg, FL
- Fashion Institute of Technology - New York, NY
- Florida Atlantic University - Boca Raton, FL
- Fordham University - Bronx, NY
- Friends University - Wichita, KS
- Hollins University - Roanoke, VA
- Indiana State University - Terre Haute, IN
- Ivy Tech Community College - Indianapolis, IN
- Jackson State Community College - Jackson, TN
- Jamestown Community College - Jamestown, NY
- Johns Hopkins University - Baltimore, MD
- Johnson County Community College - Overland Park, KS
- Lane Community College - Eugene, OR
- Loma Linda University - Loma Linda, CA
- Loyola Marymount University - Los Angeles, CA
- McNeese State University - Lake Charles, LA
- Medical College of Georgia - Augusta, GA
- Miami University - Oxford, OH
- Middle Tennessee State University - Murfreesboro, TN
- Millikin University - Decatur, IL
- Motlow State Community College - Tullahoma, TN
- Mt San Antonio College - Walnut, CA
- Nashville State Community College - Nashville, TN
- National-Louis University - Wheeling, IL
- Northeast State Technical Community College - Blountville, TN
- Northwestern College - Saint Paul, MN
- Oakland University - Rochester Hills, MI
- Oklahoma City University - Oklahoma City, OK
- Owens Community College - Perrysburg, OH
- Owens Community College - Toledo, OH
- Pace University - New York, NY
- Pacific Lutheran University - Tacoma, WA
- Pellissippi State Technical Community College - Knoxville, TN
- Purdue University - Indiana
- Roane State Community College - Harriman, TN
- Salt Lake Community College - Salt Lake City, UT
- Samford University - Birmingham, AL
- Savannah College of Art and Design - Savannah, GA
- Solano Community College - Fairfield, CA
- South Texas College of Law - Houston, TX
- Southern Utah University - Cedar City, UT
- Southwest Tennessee Community College - Memphis, TN
- Tennessee Board of Regents - Central - Nashville, TN
- Tennessee Technological University - Cookeville, TN
- Texas A&M University-Commerce - Commerce, TX
- Texas Tech University - Lubbock, TX
- The College of William and Mary - Williamsburg, VA
- The Graduate Center, CUNY - New York, NY
- The University of Montana - Missoula, MT
- University of Alabama at Birmingham - Birmingham, AL
- University of Alaska - Fairbanks, AK
- University of Arkansas Little Rock - Little Rock, AR
- University of California Santa Cruz - Santa Cruz, CA
- University of Central Oklahoma - Edmond, OK
- University of Dallas - Irving, TX
- University of Idaho - Moscow, ID
- University of Memphis - Memphis, TN
- University of Minnesota - Minneapolis, MN
- University of Montevallo - Montevallo, AL
- University of New Hampshire - Durham, NH
- University of Northern Colorado - Greeley, CO
- University of Notre Dame - Notre Dame, IN
- University of Portland - Portland, OR
- University of Puget Sound - Tacoma, WA
- University of San Diego - San Diego, CA
- University of San Francisco - San Francisco, CA
- University of South Florida - Tampa, FL
- University of South Florida Foundation - Tampa, FL
- University of the Incarnate Word - San Antonio, TX
- University of West Georgia - Carrollton, GA
- University System of New Hampshire - Durham, NH
- Vassar College - Poughkeepsie, NY
- Ventura County Community College District - Ventura, CA
- Villanova University - Villanova, PA
- Virginia Commonwealth University - Richmond, VA
- Volunteer State Community College - Gallatin, TN
- Walters State Community College - Morristown, TN
- Washtenaw Community College - Ann Arbor, MI
- Western Carolina University - Cullowhee, NC
- Westfield State College - Westfield, MA
- Wichita State University - Wichita, KS
- Wright State University - Dayton, OH
- Yale University - New Haven, CT

## Federal Government:

- EEOC - Equal Employment Opportunity
  - USDA - US Department of Agriculture
  - NEA - National Education Association
- ## State / City Government:
- Arizona Dept of Environmental Quality
  - Federation of State Medical Boards
  - Georgia Department of Agriculture
  - Philadelphia Safe and Sound
  - Atlanta Water
  - New Jersey State Parole Board
  - New York Dept of Agriculture & Markets

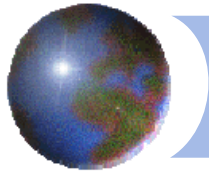
## Private Sector:

- VISA
- Simon and Schuster
- Tupperware
- Sprint / NexTel / HELIO / Talk America



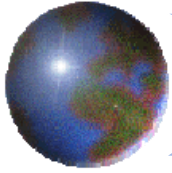
# Top 10 Features

1. No client software to install
2. Truly seamless real-time integration with no popup windows
3. Integrated batch processing in the database without exporting / importing
4. Customizable business rules and data standards down to address type level
5. Address errors are recorded in the database for easy reporting
6. Telephone, Name, and Email checking in real-time and batch



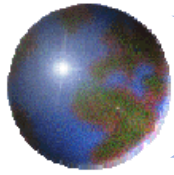
# Top 10 Features

7. Enterprise Service Oriented Architecture (SOA) - one installation serves all databases
8. Complete solution for all entry points: Banner INB, Web self-service, and Batch for existing records
9. Low annual subscription pricing for the entire institution (Prospect to Alumni + HR and Finance)
10. Support for every country in the world with Web service option



# Summary

- Address verification will improve the quality of your database and save time and money by reducing or eliminating undeliverable mail
- Dramatically reduces administrative effort to deal with data quality issues
- CLEAN\_Address provides 100% seamless real-time and batch address verification for Banner systems in less than a day
- Affordable pricing for every institution size



# Contact Information

Runner Technologies, Inc.

6530 West Rogers Circle  
Suite 31  
Boca Raton, FL 33487-2753

561-395-9322 / 877-784-0003

[sales@RunnerTechnologies.com](mailto:sales@RunnerTechnologies.com)

[www.RunnerTechnologies.com](http://www.RunnerTechnologies.com)

