Address Standardization and Parsing API User's Guide

The Software Company, Inc.
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NetAddress for .NET allows you to quickly and easily build address verification, standardization and parsing into your custom applications. Accept addresses free-form and let NetAddress do the rest. Each address will be standardized, split into USPS standard components then graded for overall completeness and accuracy. Plus, no USPS database subscription is required.

NetAddress can process all types of addresses including Suite Numbers and City/State/Zip. A special Address Quality flag is returned each time an address is processed allowing you to easily identify questionable addresses before they enter your system. Also returned is an Address Type flag indicating the type of address being processed: Street, Military, PO Box, Rural Route, Highway Contract, General Delivery or Suite giving you flexibility in their handling. And, for a more appealing presentation, let NetAddress set the proper capitalization.

As a bonus, when you combine NetAddress with our NetGender product, you can handle even the impossible task of identifying data that has been entered free-form, where the names, addresses and C/S/Z "float" from field to field. You'll always be certain of what data you're working with.

NetAddress is being used by government agencies from coast-to-coast. Some states now require that addresses be stored in standardized and parsed format to facilitate address matching from agency to agency.

Benefits

- **Save $$$ on Postage** – eliminate incomplete or questionable addresses
- **Catch Data-Input Errors** – before they enter your database
- **Standardize Addresses** – for easier matching and faster processing
- **Accurately Separate Street Address and City/State/Zip** – NetAddress recognizes over 56,000 US and Canadian city names and variants.
- **Unlimited Processing Volume** – no recurring update charges
- **Free Upgrades** for a full year

Features

- Addresses are Standardized to USPS Recommended Abbreviations
- Proper Case Conversion for More Attractive Data Presentation
- Accurately Separate Name, Street Address and City/State/Zip
- Royalty-Free Runtime
- Designed for Use with All .NET Compatible Programming Languages

NetAddress for .NET starts by carefully identifying each individual address component based on its context. Intuitive algorithms examine the results and a selection is made of the most complete and correct data. If needed, format corrections are made and the USPS recommended abbreviations are applied. The Address Quality flag is then set to indicate how complete and correct the address is. Finally, the standardized address components are returned to your application along with a complete and cleansed composite address.

Strict conformity to USPS "Postal Addressing Standards Publication 28" ensures consistent standardization of every address. However, you can easily customize these settings for critical applications.

NetAddress for .NET is the *only* address verification and parsing software that can reliably find and extract a Street Address when it's surrounded by extraneous data. It can even separate Street Address from City/State/Zip when they're in the same field.

The success or failure of any parsing software is dependent on how well it can handle "dirty" addresses. These are addresses that have non-standard abbreviations or the address elements are run together such as APT6. NetAddress can handle these and more.

Examples

Address_In: IS DEPT 123NE MAIN ST#1
Address_Out: 123 NE Main St # 1

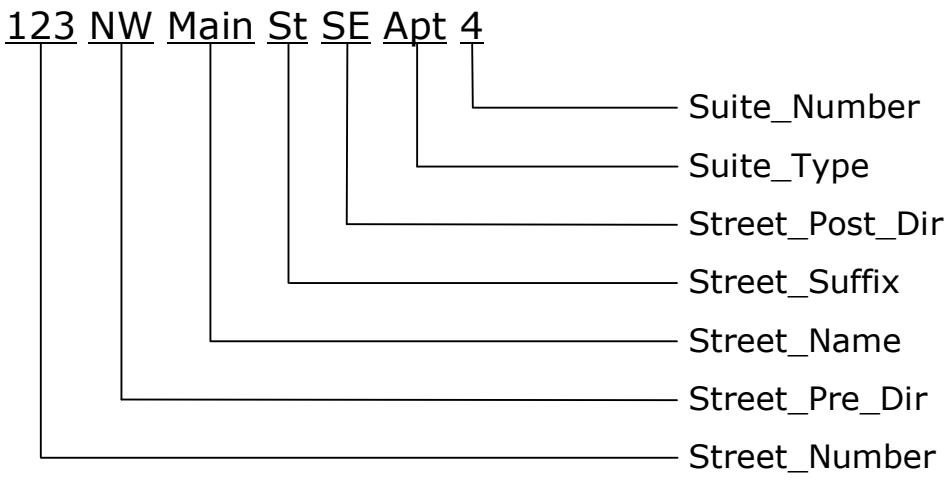
Address_In: Re: DOC#222 123 ADAMS BL AP5 ATTN BOB
Address_Out: 123 Adams Blvd Apt 5

Address_In: AP2,123NE SOUTH STREET WEST%JANE
Address_Out: 123 NE South St W Apt 2

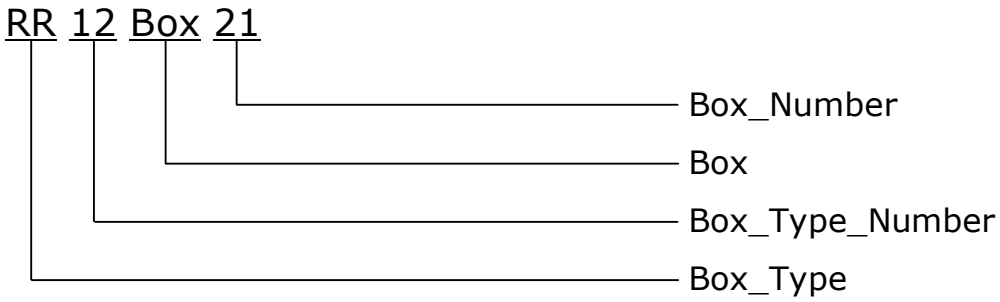
Address_In: 6TH FLOOR ONE BROADWAY ST,RE:LN-123456
Address_Out: 1 Broadway St Fl 6

Address_In: BOB JONES 1 E MAIN ST MT DORA FL327573433
Address_Out: 1 E Main St
CSZ_Out: Mt Dora, FL 32757-3433
Leading_Data: BOB JONES

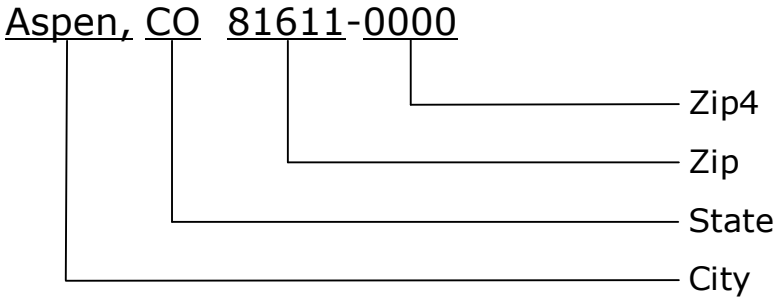
Street Address



Box Address



City/State/Zip



Canadian Addresses:
Municipality / Province / Postcode are synonymous with City / State / Zip respectively.

Address_In

Syntax: Address_In = String

Description:
Set this property to the address string to be processed. When the "Parse" method is invoked, the Address_In string is standardized and corrected then placed into the Address_Out property. In addition, each element of the Address_In string is placed into the appropriate address component property.

CSZ_In

Syntax: CSZ_In = String

Description:
Set this property to the city, state and ZIP Code string to be processed. When the "Parse" method is invoked, the CSZ_In string is standardized and corrected then placed into the CSZ_Out property. In addition, each element of the CSZ_In property is placed into the appropriate City, State, Zip component property. *Setting CSZ_In to "USA" or "Canada" will force the address to be processed using either USA or Canadian settings.*

Address_CSZ_Combined (new in v4.0+)

(replaces obsolete "CSZ_InSameField" property)

Syntax: Address_CSZ_Combined = Boolean (True/False)

Description:
Set this property to Boolean (True/False) to indicate whether or not the Address_In property also contains city/state/zip data. Set Address_CSZ_Combined to "True" to parse this extra data into the City, State and Zip properties. **Default is "False".** *See "Address_CSZ_Delimiter" property.*

Note: This property is ignored when CSZ _In property already contains data.

Address_CSZ_Delimiter (updated in v4.4+)

Syntax: Address_CSZ_Delimiter = String or "CityState"

Description:
Set this property to an *optional* delimiter string to indicate where to separate address from CSZ when Address_CSZ_Combined property is set to "True". This property can also be set to a token delimiter: "CityState". When using this setting, NetAddress will attempt to separate the address from CSZ based on an internal city/state table. If the delimiter is not found or this property is left blank, the address and CSZ are split at the most logical point. **Default is blank.** *See "Address_CSZ_Delimiter_Found" property.*

Note: This property is ignored when CSZ _In property already contains data.

Street_Number_Suite_Combined (new in v4.0+)

Syntax: Street_Number_Suite_Combined = Boolean (True/False)

Description:
Set this property to Boolean (True/False) to indicate whether or not the Street_Number property also contains a Suite_Number. Set Street_Number_Suite_Combined to "True" if you want hyphenated street numbers parsed into Street_Number and Suite_Number. **Default is "False"**.

USA: 10-100 Main Street = 10 Main St #100
CANADA: 10-100 Main Street = 100 Main St #10

Note: If a suite number is present in the Address_In string, this setting will be overridden.

Numeric_Street_Conversion

Syntax: Numeric_Street_Conversion = Boolean (True/False)

Description:
Set this property to Boolean (True/False) to indicate whether or not to convert a spelled-out ordinal street name to an ordinal number. ("Third" converts to "3rd", etc.) Set Numeric_Street_Conv to "True" if you want the street name converted. Numeric street names are spelled out only when there are duplicate street names within a postal delivery area and the only distinguishing factor is that one of them is spelled out. **Default is "False"**.

Numeric_Street_No_Ordinal (new in v4.0+)

Syntax: Numeric_Street_No_Ordinal = Boolean (True/False)

Description:
Set this property to Boolean (True/False) to indicate whether or not to convert a numeric street name to an ordinal number. ("3" converts to "3rd", etc.) Set Numeric_Street_No_Ordinal to "True" if you want to retain the original numeric street name. **Default is "False"**.

Box_POB_Conversion (new in v4.4+)

Syntax: Box_POB_Conversion = Boolean (True/False)

Description:
Set this property to Boolean (True/False) to indicate whether or not to convert "Box" to "PO Box" when "Box" is the only address found. Set Box_POB_Conversion to "True" if you want "Box" converted to "PO Box" in the output address. **Default is "False"**.

Capitalization (new in v4.4+)

(replaces obsolete "Output_Case" property)

Syntax: Capitalization = StringLiteral

Description:
Set this property to "Upper", "Lower", "Mixed" or "None" to indicate your capitalization preference for the output address and its components. Use "None" when you want to retain the existing capitalization. **Default is "None".**

Reference_File_Path (updated in v3.0+)

Syntax: Reference_File_Path = String

Description:
Set this property to the full path and file name of the user-defined file containing the Street_Suffix and Suite_Type abbreviations. A standard set of abbreviations is supplied and installed in the NetAddress installation folder under the name: "NetAddress.ref". You can rename and relocate this file to any other folder as long as you set this property to the full path and file name. **Default Reference_File_Path is first the folder of the invoking application: "AppDomain.CurrentDomain.BaseDirectory" then the NetAddress installation folder.**

See "Updating User Control Tables" later in this guide for information on customizing this file.

Static_Key_Name

Syntax: Static_Key_Name = String

Description:
Set this property to the name portion of the static key assignment or blank.

Static_Key

Syntax: Static_Key = String

Description:
Set this property to the key portion of the static key assignment or blank.

Address_Out (read only)

Syntax: String = Address_Out

Description:
After invoking the "Parse" method, this property will contain the standardized and corrected address string from the Address_In property including a suite number if present. If the Address_In string returns an Address_Quality of "Low", this property will be blank.

Address_Out_Street (read only)

Syntax: String = Address_Out_Street

Description:
After invoking the "Parse" method, this property will contain the street portion of Address_Out.

Address_Out_Suite (read only)

Syntax: String = Address_Out_Suite

Description:
After invoking the "Parse" method, this property will contain the suite portion of Address_Out.

Street_Number (read only)

Syntax: String = Street_Number

Description:
After invoking the "Parse" method, this property is set to the primary address number component of Address_Out commonly referred to as house number, civic number or range.

Street_Pre_Dir (read only)
Street_Pre_Dir_Full (full spelling of above, new in v4.4+)

Syntax: String = Street_Pre_Dir

Description:
After invoking the "Parse" method, this property is set to the standardized Predirectional component of Address_Out. Values will be a valid directional (N, NE, S, SE, etc.) or blank.

Street_Name (read only)

Syntax: String = Street_Name

Description:
After invoking the "Parse" method, this property is set to the Street Name component of Address_Out. Value will be alphanumeric.

Street_Suffix (read only)
Street_Suffix_Full (full spelling of above, new in v4.4+)

Syntax: String = Street_Suffix

Description:
After invoking the "Parse" method, this property is set to the standardized Street Suffix component of Address_Out. Values will be a valid suffix (St, Ave, Rd, etc.) or blank.

Street_Post_Dir (read only)
Street_Post_Dir_Full (full spelling of above, new in v4.4+)

Syntax: String = Street_Post_Dir

Description:
After invoking the "Parse" method, this property is set to the standardized Postdirectional component of Address_Out. Values will be a valid directional (N, NE, S, SE, etc.) or blank.

Suite_Type (read only)
Suite_Type_Full (full spelling of above, new in v4.4+)

Syntax: String = Suite_Type

Description:
After invoking the "Parse" method, this property is set to the standardized Suite Type component of Address_Out. Values will be only valid suite types (Apt, Suite, Unit, etc.) or blank.

Suite_Number (read only)

Syntax: String = Suite_Number

Description:
After invoking the "Parse" method, this property is set to the Suite Number component of Address_Out. Values will be alphanumeric suite number or blank.

Box_Type (read only)

Syntax: String = Box_Type

Description:
After invoking the "Parse" method, this property is set to the standardized Box Type component of Address_Out. Values will be only valid box types: PO Box, RR, HC, CMR, PSC, Unit or blank.

Box_Type_Number (read only)

Syntax: String = Box_Type_Number

Description:
After invoking the "Parse" method, this property is set to the Box Type Number component of Address_Out. Values will be alphanumeric box type number or blank.

Box (read only)

Syntax: String = Box

Description:
After invoking the "Parse" method, this property is set to the Box component of Address_Out. Value will be "Box" or blank.

Canadian Addresses:
Value may also be "Stn" or "RPO".

Box_Number (read only)

Syntax: String = Box_Number

Description:
After invoking the "Parse" method, this property is set to the Box Number component of Address_Out. Values will be alphanumeric box number or blank.

Canadian Addresses:
Value may also be Station name or Retail Postal Outlet (RPO) name.

Address_Quality (read only)

Syntax: String = Address_Quality

Description:
After invoking the "Parse" method, this property is set according to the completeness of the Input_Address. "Low" is returned if no recognizable address is present. "Medium" is returned if an address is present but is incomplete, such as a missing street suffix or a suite with a missing suite number. "High" is returned when a complete and technically-correct address or suite is found.

If your addresses "float" from field to field you can easily determine which field contains the address through trial and error by examining Address_Quality and Address_Type after trying each field.

Address_Type (read only)

Syntax: String = Address_Type

Description:
After invoking the "Parse" method, this property is set to one of the following address types:

S	Street	(1 N Main St, 2 US Highway 285, etc.)
A	Suite	(Apt 1, Suite 2, etc.)
P	Post Office Box	(PO Box 1)
R	Rural Route	(RR 1 Box 2)
H	Highway Contract	(HC 1 Box 2)
G	General Delivery	(General Delivery, Gen Del, GD, etc.)
M	Military	(CMR 1 Box 2, etc.)
N	Not a valid address	Address_Quality will also be set to "Low"

Address_CSZ_Delimiter_Found (read only) (new in v4.4+)

Syntax: Boolean = Address_CSZ_Delimiter_Found

Description:
After invoking the "Parse" method, this property is set to Boolean (True/False) to indicate whether or not the "Address_CSZ_Delimiter" string, if present, was found in the Address_In string.

See "Address_CSZ_Delimiter" property.

Address_Leading_Data (read only)

Syntax: String = Address_Leading_Data

Description:
After invoking the "Parse" method, this property will contain all data that precedes the actual address. If the Address_In string returns an Address_Quality of "Low", this property will be blank.

Address_Trailing_Data (read only)

Syntax: String = Address_Trailing_Data

Description:
After invoking the "Parse" method, this property will contain all data that follows the actual address. If the Address_In string returns an Address_Quality of "Low", this property will be blank.

Address_Filtered_Data (read only)

Syntax: String = Address_Filtered_Data

Description:
After invoking the "Parse" method, this property will contain all data that was filtered-out before processing according to the [FilterAddress] section of NetAddress.ref file.

CSZ_Out (read only)

Syntax: String = CSZ_Out

Description:
After invoking the "Parse" method, this property will contain the standardized city/state/zip (last line) from the CSZ_In property.

City (read only)

Syntax: String = City

Description:
After invoking the "Parse" method, this property is set to the City component of CSZ_Out.

State (read only)

Syntax: String = State

Description:
After invoking the "Parse" method, this property is set to the standardized State component of CSZ_Out. Values will be only valid USPS state abbreviations (FL, AZ, CO, etc.) or blank.

Zip (read only)

Syntax: String = Zip

Description:
After invoking the "Parse" method, this property is set to the Zip component of CSZ_Out. Values will be a 5-digit numeric zip code or blank.

Canadian Addresses:
Forward Sortation Area will be placed in Zip. This is the left segment of the postcode: A1A 1A1

Zip4 (read only)

Syntax: String = Zip4

Description:
After invoking the "Parse" method, this property is set to the Zip+4 component of CSZ_Out. Values will be a 4-digit numeric zip add-on code (sector/segment) or blank.

Canadian Addresses:
Local Delivery Unit will be placed in Zip4. This is the right segment of the postcode: A1A 1A1

Country (read only) (updated in v4.0+)

Syntax: String = Country

Description:
After invoking the "Parse" method, this property will contain the country identified by the input state/province. Values will be the ISO 3166-2 standardized country code: "US" (USA), "CA" (Canada) or blank.

State_FIPS (read only) (new in v4.0+)

Syntax: String = State_FIPS

Description:
After invoking the "Parse" method, this property is set to the Federal Information Processing Standard (FIPS) code for the state/province in which the address resides. Values will be a two-digit numeric string or blank.

CSZ_Quality (read only)

Syntax: String = CSZ_Qualty

Description:
After invoking the "Parse" method, this property is set to "Low", "Medium" or "High" to indicate the probability that the CSZ_In property value is complete and correct.

CSZ_Filtered_Data (read only) (new in v4.0+)

Syntax: String = CSZ_Filtered_Data

Description:
After invoking the "Parse" method, this property will contain all data that was filtered-out before processing according to the [FilterCityStateZip] section of NetAddress.ref file.

Return_Code (read only)

Syntax: String = Return_Code

Description:
After invoking the "Parse" method, this property is set to blank upon successful completion. Most exceptions occur on the first invocation. The most common ones are listed below. *This property should be examined on each return from NetAddress.*

Common Return Codes:

R35	Reference File Not Found *(see "Reference_File_Path" property)*
T00	Suffix Table Limit Reached (1,024)
T01	Suite Type Table Limit Reached (256)
T02	Filter Table Limit Reached (128)
T03	City / State Table Limit Reached (256)
L00	Evaluation Period Expired
L01	Static Key Validation Failed *(see "Static_Key" property)*
L50 – L69	Evaluation License Error

Clear

Syntax: NetAddress.Clear

Description:
When this method is invoked, all properties are cleared with the exception of Static_Key, Static_Key_Name and Reference_File_Path.

Parse

Syntax: NetAddress.Parse

Description:
When this method is invoked, the Address_In property is standardized and corrected then placed into the Address_Out property. In addition, each element of the Address_Out property is placed into the appropriate address component property and the Address_Quality and Address_Type flags are set. The Return_Code property is also set and should be checked after each invocation of the "Parse" method. *See "Return_Code" property.*

Updating User Control Tables

NetAddress.ref is a file containing the address standardization control tables. It is located by default in the "NetAddress" installation folder. Use Notepad or a similar text editor to edit the contents. Detailed information on the format of the entries is contained within the file. This file can also be relocated. *See "Reference_File_Path" property*.

[StreetSuffixUSA]
[StreetSuffixCanada] *(avoid altering full spelling of: "Street", "Avenue", "Road")*

ST	Street	St	Y
STR	Street	St	N
STREET	Street	St	N

[SuiteType] *(avoid altering full spelling of: "Box", "Floor", "#")*

STE	Suite	Ste	Y
SUITE	Suite	Ste	Y

Specify which street suffixes and suite types are to be recognized as well as your preferred abbreviations and full spellings.

1st Column: Common
2nd Column: Full Spelling *(see "Street_Suffix_Full" and "Suite_Type_Full" properties)*
3rd Column: Abbreviation *(see "Street_Suffix" and "Suite_Type" properties)*
4th Column (street suffix):
City Prefix Flag (Y/N) - When Address_CSZ_Combined is set to "True" and a street suffix is already present, treat this suffix as part of the city name.
4th Column (suite type): Suite number required.

[CityState]
T OR C, NM

CityState delimiter table supplement. *(See "Address_CSZ_Delimiter" property)*

[CityName], [StateAbbreviation]

[FilterAddress]
[FilterCityStateZip]
IGNORE THIS

The filter section of the table allows you to specify which characters, words or phrases are to be ignored during processing. All filters that are found are stored in the "Address_Filtered_Data" and "CSZ_Filtered_Data" properties.

NetAddress v4.4 for .NET — Installation Notes

If Installation Doesn't Start Automatically:

- Select **Start > Run** from the Task Bar.
- Type CD/DVD drive letter followed by ":\NetAddress44.msi" and press enter.

In the folder: "Program Files\The Software Company\NetAddress 4.4" you will find C# and VB.NET sample programs. There is also a compiled version called: "VBSample.exe" that you can run to demonstrate NetAddress.

Deploying Your Applications

Be sure to include the following in your deployment package:

NetAddress.dll – usually placed in the application folder*
NetAddress.ref – usually placed in the application folder**
Fujitsu.COBOL.dll – usually placed in the application folder or Global Assembly Cache

* Other builds can be found in the NetAddress "Versions" folder.
** NetAddress.ref can be relocated anywhere on the target machine as long as the full path and file name are specified in the Reference_File_Path property.

The evaluation license is valid for a period of 30 days or up to 1,000 calls.

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