

Improving Data Quality with Real-Time Web Services



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Overview

Visitors to your website are valuable leads and capturing their contact information is essential to converting them to customers. However, when prospects enter email addresses and phone numbers into a web form they often make mistakes, such as misspellings and typos, or they falsify data, which prevents you from being able to contact them. This is where real-time data validation services come in.

Real-time data validation services provide tools to increase data accuracy at the time it is entered. By using a data validation Web Service when a visitor to your website enters his or her information, you can immediately verify that it is accurate and valid. In the event that someone submits invalid data, you can prompt them to enter corrected information, reject a transaction, or apply business rules to improve the performance of your data collection efforts. The end result is a more accurate database of new contacts that will generate better response rates and increase the productivity of your sales and marketing efforts.

The Value of Data Validation

In a recent analysis of validation transactions across clients, TowerData found that an average of 4% and as much as 8% of contact data entered by visitors to our clients' websites were incorrect or invalid. As illustrated in Table 1, the lost opportunity this invalid data presents can be quickly calculated by applying your average conversion rate and lifetime value for a customer to the number of new monthly leads you receive.

Monthly Leads	5,000
Invalid Rate	6%
Invalid Leads	300
Average Conversion Rate	5%
Lost Customers	15
Lifetime Customer Value	\$250
Lost Monthly	\$3,750
Lost Annually	\$45,000

Table 1: Calculating the Opportunity Cost of Bad Leads

However, lost revenues are only part of the equation. Bad data also leads to additional mail, telemarketing, and data hygiene costs. Investing in up front data validation will increase the effectiveness of your sales efforts and save you money on marketing communications.

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Validating Data

Contact information such as email addresses and phone numbers are difficult to verify accurately. Simplistic checks can be used to confirm that an email has an at sign, '@', or that a phone number has ten digits. However, to know whether an address can receive email or a phone number can be called requires a more sophisticated application.

Email Validation

Invalid emails are costly. If you pay a service provider to deliver your mail, mailing bad email addresses has a direct hit on the bottom line. Mailing to dead addresses also hampers your ability to send to your good ones. Top ISPs such as AOL will reduce your delivery rate, or may even block you, if you mail to too many invalid addresses. Even harder to quantify are the sales and goodwill you have lost by not capturing the correct email addresses for your prospects and customers. You can avoid these costs and improve your marketing results by validating email addresses as you receive them.

Email validation comprises

- Detecting format and syntax errors,
- Validating email address domains are functioning, and
- Verifying that customers' mailboxes work.

The proper format for email addresses is defined by the Internet standards document RFC 2822 (See Figure 1 for a sample). It is a convoluted and recursive definition, and yet it is not fully accurate because there are some email address formats that are used in practice that do not meet the standard. For example, the address john.@domain.com, with a period before the '@', violates the standard but would be accepted by many email servers. The problem with most email validation solutions is that they have a simplistic idea of what an email address is and they reject some email addresses that are in fact valid. You could be frustrating and turning away potential customers because they can not enter their perfectly valid email addresses on your site. Conversely, you most likely are accepting emails that good validation would identify as invalid. For example, which of these is invalid: john@dom-ain.com or john@dom_ain.com? The latter one is. Would your existing validation catch it? Be sure to use a solution built with knowledge of the standards and the expertise to know the exceptions.

addr-spec	=	local-part "@" domain
local-part	=	dot-atom / quoted-string / obs-local-part
domain	=	dot-atom / domain-literal / obs-domain
dot-atom	=	[CFWS] dot-atom-text [CFWS]
dot-atom-text	=	1*atext *("." 1*atext)
domain-literal	=	[CFWS] "[" *([FWS] dcontent) [FWS] "]" [CFWS]
quoted-string	=	[CFWS] DQUOTE *([FWS] qcontent) [FWS] DQUOTE [CFWS]

Figure 1: Part of the Email Address Format in RFC 2822

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By using email verification that incorporates accurate ISP format rules, you will capture even more valid emails. Most ISPs have their own format rules, in addition to those governing overall email address syntax. For example, AOL email addresses never start with a number. Yet determining ISP specific rules requires study of published guidelines and analysis of large lists of known valid emails. A case in point, Yahoo's email format has evolved over time as it has acquired some smaller ISPs, and the formats it accepts are broader than the format used for newly created Yahoo emails. Select a provider with the necessary know-how.

Identifying proper email syntax is only the start, but that is where most email validation programs stop. If your site only uses JavaScript email validation, it is only stopping a fraction of bad emails because it does a limited set of syntax checks and does not verify the domain. Properly validating email domain names, the portion of the address to the right of the '@', will greatly increase your data quality.

A valid domain both exists and will accept email sent to it. There are many domains that have been registered but have never had an email server setup for it and thus can not accept any mail. There are even domains that point to an email server but that server will reject any emails addressed to that domain. Verifying domain validity, however, is problematic due to the instability of the Internet. The majority of domain validation software relies on checking a domain once at a single point in time. However, network outages are a common occurrence. Top ISPs such as Google, AOL, Yahoo, and BlackBerry have all had periods where their networks went down, and smaller networks and domains go down even more frequently. If you rely on a validation solution that is limited to a real-time domain check, you are bound to reject good email addresses for domains that could not be reached at the time of the check.

Reliable domain validation requires a database-backed application that checks domains multiple times over a period of days. By storing check results in a database and only marking a domain as dead if it consistently fails multiple checks over days, you can be assured that you are not mistakenly turning away potential customers.

The final step to email validation is verifying the mailbox at the domain. Hotmail.com is a real domain, but does Brigid have an account there? The best way to verify a mailbox is to send an email to it and see if it bounces, but there is not enough time to do this when a customer clicks submit on your web form because bounces can be delayed and the visitor will most likely have moved on before you get the result. Fortunately, most email servers will immediately tell you if a mailbox is invalid when you attempt to send an email to an address. Advanced email validation software can ping the mailbox by pretending to send an email to it without actually doing so. In this way, you can determine whether an email address is invalid or not. It is important to note, however, that not every domain supports this type of verification, and AOL and Yahoo email addresses in particular can not be verified this way.

Telephone Validation

The quality of telephone leads can often be compromised by both typographical errors and falsified data by those attempting to avoid unwanted phone calls, and calling bad phone numbers will lead to frustration and lost productivity amongst your sales and marketing team.

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Validation services can be used to verify that a telephone number is

- Syntactically correct,
- Contains a valid area code and exchange, and is
- In service.

Verifying phone syntax and the area code and exchange combination depends on the North American Numbering Plan (NANP), the telephone numbering system for nineteen North American countries. All NANP numbers are ten digits consisting of a three-digit Numbering Plan Area code, commonly called an area code, followed by a seven-digit local number. The first three digits of the local number are called the exchange.

Implementing a service such as TowerData's Real-Time Phone Validation can ensure that the numbers you collect are properly formatted and contain valid area code and exchange combinations. Furthermore, you will receive updated area codes for numbers that have been assigned a new area code due to population growth.

Since phone numbers are area specific, a good deal of geographic information can be derived from a phone number, which can be used to segment leads and optimize your marketing efforts. The following information that can be obtained using the appropriate service:

- Time Zone
- Country
- County
- Latitude
- Observes Daylight Savings Time
- State
- City
- Longitude

What are Web Services?

A Web Service is an application that uses open standards for exchanging data between applications or systems. Software applications written in various programming languages and running on various machine platforms can use Web Services to easily exchange data over computer networks like the Internet.

How Do Web Services Work?

Web Services work very simply. You send the service a processing request, it does the work, and it returns the results. Depending on the service you use, the data will be cleansed and standardized, validated and verified, and appended with additional information. It is then returned to you in the same format in which it was sent.

Communication between your Web Services provider and your systems is done in real-time and independent of the programming language or operating system you use. Many Web Services make this possible by using SOAP and XML, two open standards that are platform independent and vendor neutral:

SOAP (Simple Object Access Protocol) is a protocol for exchanging XML-based messages over a computer network.

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XML (Extensible Markup Language) is a flexible way to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere. XML is a formal recommendation from the World Wide Web Consortium (W3C).

In practice, the data to be validated is formatted in XML and sent to the Web Service over the Internet using SOAP. The request is processed, and an XML response is created and returned to you in a SOAP object.

All major programming languages provide tools for working with SOAP messages, and your provider should be able to provide you with sample code for accessing their application. For more detailed examples on how Web Services work refer to TowerData's Web Services Implementation Guide available at http://www.towerdata.com/services/web/implementation_guide.html

Applying Validation Results

You should carefully consider what should be done when validation results are returned from a Web Services provider. Both your business' and your customers' needs should be evaluated when determining how to apply them.

When invalid data is received you have several choices to make. Will you prompt the user to re-enter? Or simply flag the invalid data in your database? What if the email is valid but the phone number is not? With Web Services you have the freedom to refine your business rules until you obtain the ideal outcome for your goals.

How Validation Web Services Benefit You

Keeping your data clean has a clear value, and real-time validation Web Services are a fast and easy way to achieve that objective. Using Web Services can benefit you by helping to:

Increase Sales

Bounced emails and invalid phone numbers are missed opportunities to reach new clients. Validating contact data in real-time will improve the ability of your sales and marketing program to reach both new and existing customers, resulting in increased sales and greater customer satisfaction.

Reduce Costs

Using Web Services to verify information as it is received will save you time and money by ensuring you have accurate data to work with immediately. Sending an email to a dead address or calling a wrong number is cost and effort you can avoid. You will also save by eliminating costs due to correcting data after it has been collected.

Improve Efficiency and Metrics

Once your lead quality improves from using real-time Web Services, your sales team will be happier and more efficient in the time they spend, your IT team will not have to fight a losing battle trying to stay on top of bad data, and your metrics will improve because you will not be counting false leads.

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Ease Installation and Maintenance

Web Services are practically plug and play. No matter what type of system you are using, a programmer should be able to install Web Services within a matter of hours. In addition, by using a Web Service you avoid extensive development costs and the need to continually update the data used to perform the validation. Any upgrades to the service happen transparently.

Conclusion

Bad leads can be a serious expense and hamper your sales efforts. Using a real-time data validation Web Service is an excellent way to improve the quality of your data at the point of entry. It is fast, easy to use, and cost-effective. Use Web Services to increase the performance of your lead generation and fulfillment programs.

For additional information, please contact us at:
1-866-377-3630 or info@towerdata.com

For a free, no obligation Web Services trial, visit:
<http://www.towerdata.com/services/web/index.html>

About TowerData

TowerData is a leading provider of email and data solutions. TowerData has specialized in email append since its founding and participated in the creation of the Council for Responsible Email's (CRE) Best Practices for E-mail Append document in 2002.

Covering the entire lifecycle of customer information, TowerData services help businesses acquire and retain customers, validate and enhance data, and deploy and analyze marketing campaigns. Since 2001, TowerData has improved customer communication for leading companies such as American Eagle Outfitters, Reader's Digest, Brookstone, LensCrafters, Citrix Systems, Inc., and Cathay Pacific Airlines.