

# Universal Acceptance of All TLDs



18 May 2012



# What is Universal Acceptance?

- Ensure that software on the Internet universally accepts all domains (both ASCII and IDN domains)
- Does not cover policy aspects of what domains should be allowed or restricted

# Acceptability Issues Example

http://example.com

http://example.xxx

http://япон.рф

http://example.XN--P1AI

Chat icon and input field

registry.sx - Google Search

Google Inc [US] https://www.google.com/search?sourceid=chrome&ie=UTF-8&q=registry.sx

Did you mean to go to <http://registry.sx/>?

+Klm Search Images Maps Play YouTube News Mail Drive Calendar More

Google registry.sx

Search About 4,420,000 results (0.24 seconds)

Everything **SX Registry**  
[registry.sx/](http://registry.sx/)  
SX Domain Names .SX is the new country code Top Level Domain of the new autonomous country of Sint Maarten. Sint Maarten is the "Dutch Part" of the island ...

Images

Maps

Videos **IANA — .sx Domain Delegation Data**  
[www.iana.org/domains/root/db/sx.html](http://www.iana.org/domains/root/db/sx.html)

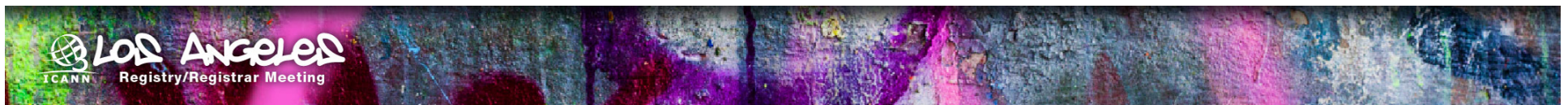
News Rudia Mezas SX Registry SA B.V.. Cruise Terminal Building Suite 1. Pointe Blanche Sint Maarten (dutch Part) Email: [admin@registry.sx](mailto:admin@registry.sx). Voice: +1.7215202926 ...

Shopping

More **.sx - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/.sx](http://en.wikipedia.org/wiki/.sx)  
Jump to **Registration phases**: ... October 4th 2012; General Availability Period when anyone will be able to **register** a .SX Domain Name – starting October ...

Marina Del Rey, CA

Hat tip: <http://domainincite.com/google-chrome-handles-new-tlds-badly/>



# Acceptability Issues Example

Permanent Home Address Line 1\*:

Permanent Home Address Line 2:

City\*:  State\*: CA

Zip Code\*:  -

Note: You must be a U.S. resident. No P.O.

SSN\*:  -  -

Date of Birth\*:  /  /  (MM/DD/YYYY) You must be 18 or older, 19 in Al be cons

Mother's Maiden Name\*:

E-mail Address:  @  .

- aero
- biz
- com
- coop
- edu
- gov
- info
- mil
- museum
- name
- net
- org
- pro
- us



# Examples of Causes

- Improper logic in software for checking valid domains
- Lack of IDNA support
- Old software that is not yet upgraded
- Issues caused by [publicsuffix.org](http://publicsuffix.org)?

# Example of Hard-Coded List

```

473      "ua",           // Ukraine
474      "ug",           // Uganda
475      "uk",           // United Kingdom
476      "um",
477      "us",
478      "uy",
479      "uz",
480      "va",
481      "vc",
482      "ve",
483      "vg",
484      "vi",
485      "vn",
486      "vu",
487      "wf",
488      "ws",
489      "

    $_cctld = array(
        'ac',
        'ad','ae','af','ag',
        'ai','al','am','an',
        'ao','aq','ar','as',
        'at','au','aw','ax',
        'az','ba','bb','bd',
        'be','bf','bg','bh',
        'bi','bj','bm','bn',
        'bo','br','bs','bt',
        'bu','bv','bw','by',
        'bz','ca','cc','cd',
        'cf','cg','ch','ci',
        'ck','cl','cm','cn',
        'co','cr','cs','cu',
        'cv','cy','cz',
        'dk','dm',
    );

```

```

$_gclid = array(
    'aero',
    'biz',
    'cat',
    'com',
    'coop',
    'edu',
    'gov',
    'info',
    'int',
    'jobs',
    'mil',
    'mobi',
    'museum',
    'name',
    'net',
    'org',
    'pro',
    'travel',
    'asia',
    'post',
    'tel',
    'geo',
);

```

Czechoslovakia?

.geo?

# Example of String Length Check

But you can do much more with regular expressions. In a text editor like [EditPad Pro](#) or a specialized text processing tool like [PowerGREP](#), you could use the regular expression `\b[A-Z0-9._%+-]+@[A-Z0-9.-]+\.[A-Z]{2,4}\b` to search for an email address. Any email address, to be exact. A very similar regular expression (replace the first \b with ^ and the last one with \$) can be used to

All TLDs must be 2-4 ASCII letters (A-Z)



*So how does one  
universally accept  
domains?*



# Checking TLDs

- Do you need to check domain validity?
  - If not, don't do it. Rethink why you do it.
  - e.g. if it is an email that needs to opt-in, will be caught that way
- If so, is it an online application?
  - If so, use a DNS query which is instant and up-to-date, don't rely on a fixed list.
- Last case scenario
  - Use a fixed list of TLDs, but make sure it has an update mechanism (e.g. once per day)

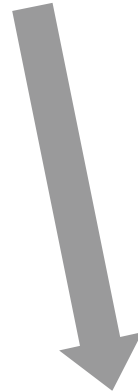


# Don't forget IDNs

- Multiple representations of the same domain
- New concepts like “right-to-left”
- Not just in the “domain name” field, can be in email addresses, web addresses, name servers, and elsewhere.

*U-label*

例え.テスト



xn--r8jz45g.xn--zckzah

*A-label*



*What's been done  
so far?*

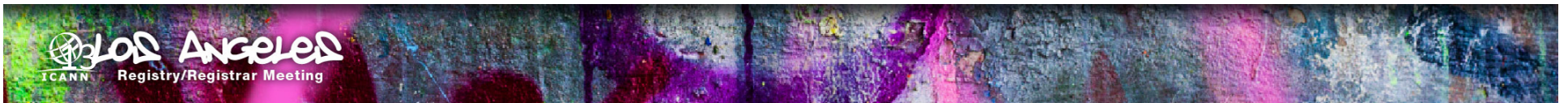
# Activities to Date: 2003-2004

## - SSAC recommendations:

- Develop an advisory
- Create central repository of known issues
- Internet Infrastructure providers and Internet software application developers review and test software to support new TLDs

## - IAB - RFC3696

*“Application Techniques for Checking and Transformation of Names”*





# Activities since 2004 (1/2)

- Discussion forum and dedicated web page
- Prepared technical recommendations
- Posted TLD verification tool, see [github.com/icann](https://github.com/icann)

## Public Repositories (5)

Find a Repository...

All Repositories

Sources Forks Mirrors

 [uniaccept-python](#)

Python  5  4

Universal Acceptance Toolkit for Python

Last updated 2 months ago

 all commits  commits by owner

52 week participation

 [uniaccept-java](#)

Java  1  1

Universal Acceptance Toolkit for Java

Last updated 3 months ago

 all commits  commits by owner

52 week participation

 [uniaccept-c](#)

C  2  1

Universal Acceptance Toolkit for C

Last updated 3 months ago

 all commits  commits by owner

52 week participation

 [uniaccept-cs](#)

C#  2  1

Universal Acceptance Toolkit for C#

Last updated 3 months ago

 all commits  commits by owner

52 week participation

 [uniaccept-perl](#)

Perl  1  1

Universal Acceptance Toolkit for Perl

Last updated 3 months ago

 all commits  commits by owner

52 week participation



# Activities since 2004 (2/2)

- “Initial Report on Universal Acceptance of IDN TLDs” published by JIG Working Group
- Consultations with impacted parties
- Round table in Costa Rica





***What should we do  
now?***



# ICANN tasks

- Out reach campaign
- Improve TLD verification libraries
- Create and share informational and educational materials
- (Your idea here.)




**LOS ANGELES**  
 Registry/Registrar Meeting

# Draft outreach materials

## Collateral Proposal

### Existing Project Pages

Internet Corporation for Assigned Names and Numbers  
 Home About News Policy **In Focus** Meetings Resources Documents Press Room Careers Contact

**In Focus** **Universal Acceptance of All Top-Level Domains**

Universal Acceptance of All Top-Level Domains  
 In order for the full resources of the Internet to be globally available for all users, service and application providers must make use of the complete range of top-level domains (TLDs).

**Announcements**  
 A current list of all top-level domains that have been designated within the authoritative root-server system is available here. This list is maintained by the IANA and provides a regularly-updated index of TLDs that currently exist in the root zone.

**Rejection of some TLD strings due to outdated length parameters or other erroneous demarking criteria can be avoided by reliance on authoritative information.** As described in Support of New Top-Level Domains by Internet Infrastructure Operations and Application Providers (2003), and Evolution of New TLDs (2004), several technical acceptance issues were associated with the TLDs introduced in 2000-2001. This was particularly true for TLDs of more than 3 characters.

**ICANN's A-List, Cooperation among registry operators, ISPs, and others who sell domain names as a regular basis is critical to ensuring the continued realization of the Internet's potential for commerce and communications.** In October of 2004, ICANN hosted a discussion forum on TLD acceptance issues to foster cooperation among the necessary parties. The archive of this discussion forum is available here. To join this discussion list, simply send a message to [registrar@icann.org](mailto:registrar@icann.org), with the words "subscribe to acceptance" in the body of the message.

To submit questions or contribute additional material that may be helpful in further work on this subject, please contact ICANN.

**Announcements**  
 ICANN Releases Beta-3 Version of TLD Verification Code  
 TLD Verification Tool  
 22 March 2007

ICANN has issued today a new version of code intended to assist software developers and application providers who are interested in implementing TLD verification.

ICANN Releases Beta TLD Verification Tool  
 3 December 2006

Today ICANN released a beta version "Top-Level Domain (TLD) Verification Tool." This verification tool has been developed in response to problems reported by gTLD registries and end users of the non-acceptance of some existing TLDs. These problems occur in some current implementations because: 1) they do not recognize any TLD of more than three characters, or 2) they rely on legacy information where only country codes and a handful of ccTLDs are recognized as valid.

ICANN Creates Area on Universal Acceptance of TLDs  
 20 March 2005

In order for the full resources of the Internet to be available to all users globally, service and application providers must make use of the complete range of top-level domains (TLDs). To provide accessibility to up-to-date TLD information, ICANN is making available a new page of resources related to this topic.

### New Dedicated Microsite

acceptdomains.org

**Does your software or website support the whole Internet?**

In the 1980s and 1990s, the format of domain names was simple. All domains ended with a small number of common endings like ".com" and ".net" or a two-letter code that represented a country like ".de" and ".uk". Times have changed. Since 2001, domain endings have been more than three letters long (think of ".info" or ".museum"), and since 2007, non-Latin characters have been used too.

Software vendors, with the developers, and others often constrain what they allow as a valid domain name in their applications, and the domains they have made to avoid domains to endings such as ".com" are hampering the growth of the Internet. Our effort toward universal acceptance of domains seeks to ensure those that do any kind of domain name validation do so in a correct way that allows for all valid domains to function correctly, whether they were registered 20 years ago or today.

**What should I do?**

- Don't check domain validity if you don't need to.** A lot of applications don't need to constrain the domain field, so unless you have a compelling reason to constrain it, leave it open.
- Don't check the length of a domain to determine validity.** You can no longer assume domain endings will be 2 or 3 characters long. They potentially can be between 1 and 63 characters.
- Do use an IDN library to properly convert domain names if they are required in enough breadth.** There are many libraries, many that are used by major software vendors to implement this functionality. Make sure the library supports the most current "IDNA2008" standard, or the older standard if you have compatibility issues.
- Don't use a hard-coded list of domains in your application.** If you need to check if a domain exists, the best way to do it is using the DNS protocol. A low DNS query happens quickly and has the most up-to-date data available.
- If you require a hard-coded list, do make sure it is regularly updated (e.g. daily)** using an appropriate methodology. ICANN provides some sample tools on how this might be done.
- Do ask questions if you are not sure.** ICANN is happy to help provide advice to software implementers on what is needed if this information is not clear to you.
- Do report software or software that has problems accepting newer domains.** If you notice a website that has problems, let us know and we'll try to track who we be open to encourage them to follow these guidelines.

[More info >](#)

[More info >](#)


[More info >](#)

[More info >](#)

### New Fact Sheet

**Fact Sheet: Universal Acceptance of Domains**

**What's the problem?** In the 1980s and 1990s, the format of domain names was simple. All domains ended with a small number of common endings like ".com" and ".net" or a two-letter code that represented a country like ".de" and ".uk". Times have changed. Since 2001, domain endings have been more than three letters long (think of ".info" or ".museum"), and since 2007, non-Latin characters have been used too. Software vendors, with the developers, and others often constrain what they allow as a valid domain name in their applications, and the domains they have made to avoid domains to endings such as ".com" are hampering the growth of the Internet. Our effort toward universal acceptance of domains seeks to ensure those that do any kind of domain name validation do so in a correct way that allows for all valid domains to function correctly, whether they were registered 20 years ago or today.



**What has changed?**

- No predetermined length.** Until 2001, domains ended with either 2 or 3 character extensions. This is no longer true. Now your software that domain endings to 2 or 3 characters, or have a hard stop-down bar!
- Modified set of TLDs.** In 2001 there were about 20 such endings, there are now over 300. This will grow at a higher rate from 2012 due to the new gTLD programme. Does your software have a hard-coded list of valid TLDs that it checks against? If regularly updated!
- Non-Latin domains.** Until the accept domain names as input (such as email addresses, URLs, etc.) need to accept non-Latin but other encodings to work properly. Can your software detect accept "accents" if entered into a domain-related field?

### Specific technical info pages on individual topics

acceptdomains.org

acceptdomains.org

acceptdomains.org

**Use an IDN library.**

### Form for end-users to report broken software and websites

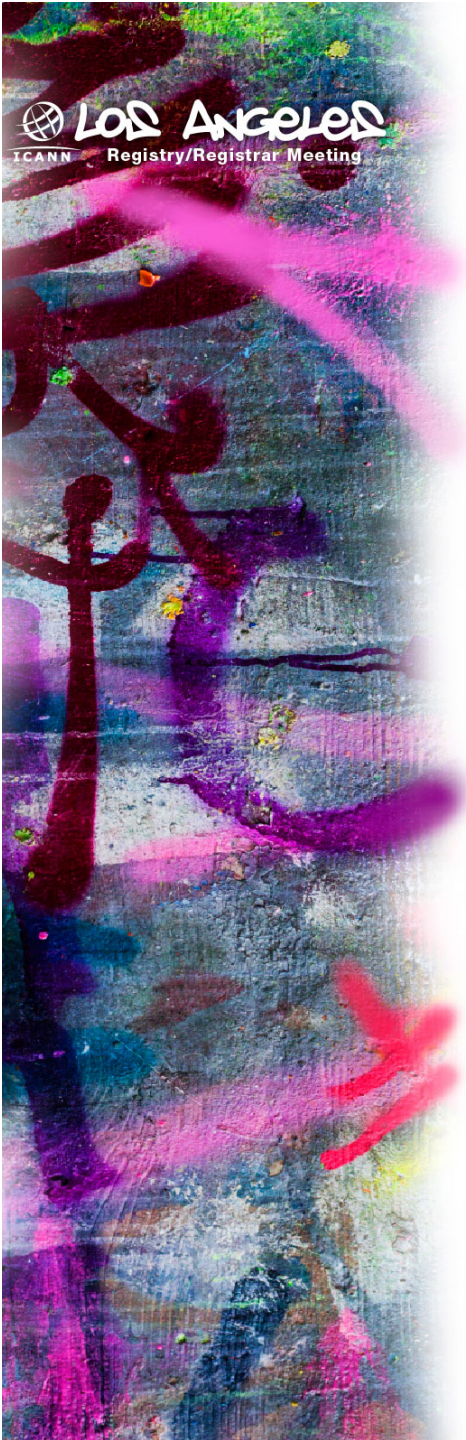
acceptdomains.org

**Having a problem with a website?**



# Your tasks

- “Walk it like you talk it” – do all your applications properly support all domains?
- Inform and educate vendors and others
- Feedback to:  
[tld-acceptance@icann.org](mailto:tld-acceptance@icann.org)



Thank You