

I C A N N

VIRTUAL ANNUAL GENERAL

69

Remediating Universal Acceptance (UA) Issues

ICANN69 Annual General Meeting
20 October 2020



Agenda

- Welcome Remarks - Dr. Ajay Data, UASG
- Introduction to Universal Acceptance (UA) - Dennis Tan Tanaka, UASG
- Technical UA Issues Identified for Remediation
 - Email Address Internationalization (EAI) - Mark Svancarek, UASG
 - Technology - Satish Babu, UASG
- Workshop - Resolving Universal Acceptance Issues
- Questions and Answers (Q&A)

Welcome Remarks

Dr. Ajay Data
Chair, UASG



Universal Acceptance

Universal Acceptance (UA)

To address UA, Universal Acceptance Steering Group (UASG) organized as a community initiative

Vision

All domain names and email addresses work in all software applications.

Mission

To mobilise the software application developers to get their products UA Ready by providing encouragement, documentation, case studies, tools and measures to deliver the right user experience to the end user

Impact

Promote consumer choice, improve competition, and provide broader access to end users.

Introduction to Universal Acceptance

Dennis Tan Tanaka
Chair, Measurement WG



What is Universal Acceptance (UA)?

- The Domain Name System (DNS) has changed dramatically over the last decade. There are now more than 1,200 active generic top-level domains (gTLDs) and some of these include domains that use non-Latin scripts and that are longer than three characters (e.g. .ไทย, .LONDON, .SPORT).
- Universal Acceptance is cornerstone to a digitally inclusive Internet by ensuring all domain names and email addresses – in any language, script, or character length (e.g., .pф, .PHOTOGRAPHY) – are accepted equally by all Internet-enabled applications, devices, and systems.
- Achieving UA ensures every person has the ability to navigate and communicate on the Internet using their chosen domain name and email address that best aligns with their interests, business, culture, language, and script.

What Can UA Mean to You?

- A strong understanding of UA is the new competitive differentiator every developer should have in their skill set.
- System developers can support the next billion Internet users (many of which are non-English speaking) by ensuring that their systems are UA-ready.
- Help support a multilingual and diverse Internet by ensuring your mail systems, corporate systems, and customer collaboration tools support Email Address Internationalization (EAI).
- Governments can better reach and serve their diverse constituents by being UA-ready.
- Businesses that are UA-ready will be best positioned to reach growing global audiences and maximize revenue potential from the current Internet population, as well as the next billion.
- The Universal Acceptance of Internet domain names is a \$9.8+ billion opportunity (a conservative estimate).

Universal Acceptance Steering Group (UASG)

The UASG was founded in February 2015 and is tasked with undertaking activities that will effectively promote the Universal Acceptance of all valid domain names and email addresses.

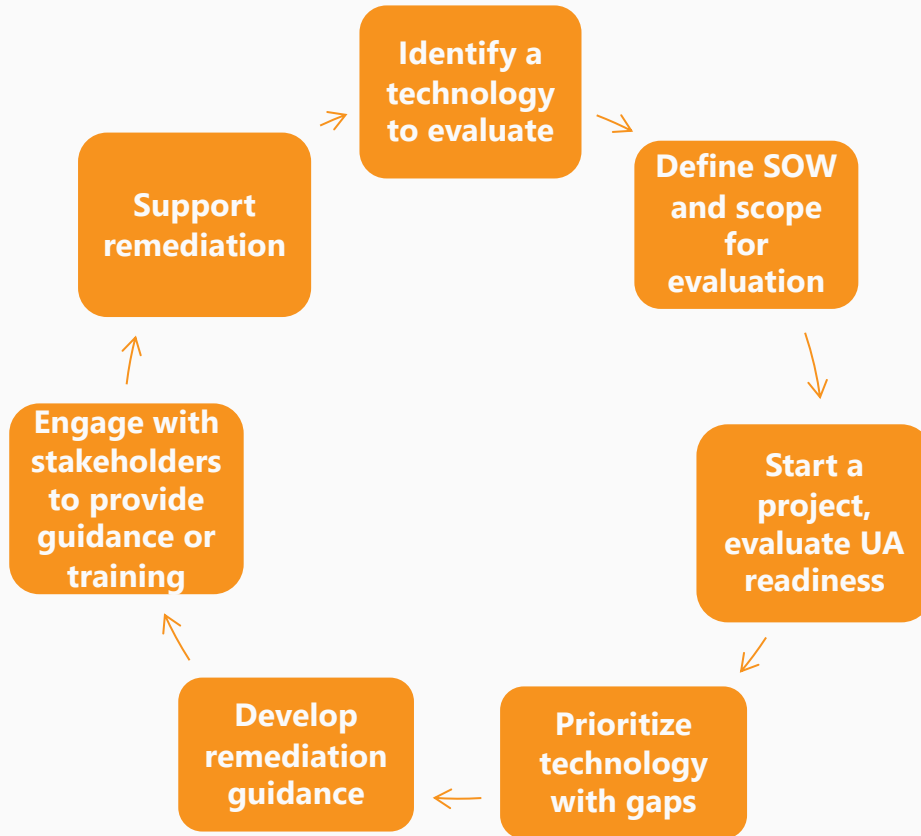
The UASG's main objectives are to:

- Raise awareness of UA issues among relevant stakeholders.
- Help developers make their systems UA-ready by providing documentation and getting common standards, technology, and tools UA-ready.
- Encourage businesses and governments to ask their developers and suppliers to provide UA-ready solutions for the benefit of end users.
- Measure progress on UA readiness.

UASG Working Groups

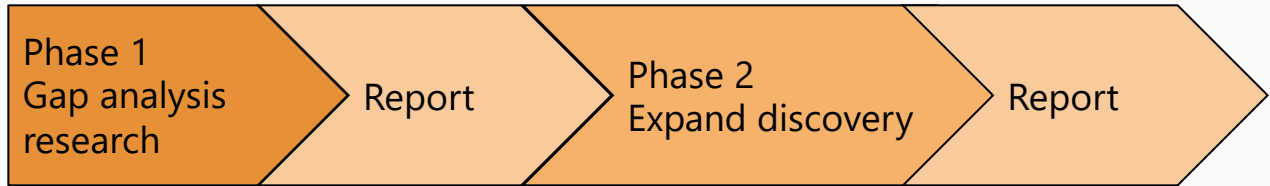
| UASG Working Groups | Role |
|--|--|
| Technology Working Group | Oversees remediation work on standards, programming languages, tools, and development platforms. |
| Email Address Internationalization (EAI) Working Group | Oversees engagement with email software and service providers to make them EAI ready. |
| Measurements Working Group | Identifies UA readiness gaps in tools and technologies. |
| Communications Working Group | Develops communication strategy and oversees its execution in collaboration with other working groups. |
| Local Initiatives Working Group | Conducts national or regional UA awareness, training, and stakeholder engagements. |
| UA Ambassadors | Organize training and outreach at national and regional levels. |

UA Remediation Cycle



UA Readiness of Content Management Systems Example

Pilot project, followed by comprehensive project.



Small scope



UAM-WG Report:

Recommendations:

- Technical Training
- Address deficiencies

Larger scope



UAM-WG Report:

Recommendations:

- Technical Training
- Address deficiencies



Accept



Validate



Process



Store



Display

Main Categories Affected by UA Readiness

Domain Names

- New short top-level ASCII domain names: example.sky
- New long top-level ASCII domain names: example.engineering
- Internationalized Domain Names (IDNs): คน.ไทย

Email Addresses

- ASCII@ASCII (new and long TLD): ekrem@misal.istanbul
- ASCII@IDN: marc@société.org
- Unicode@ASCII: 测试@example.com
- Unicode@IDN: όνομα@παράδειγμα.eu
- Unicode@IDN; right-to-left scripts: ای-میل@مثال.موقع



Accept



Validate



Process



Store



Display

UA Readiness in the Technology Stack

Applications and Websites

- Wikipedia.org, ICANN.org, Amazon.com, custom websites globally.
 - PowerPoint, Google Docs, Safari, Acrobat, custom apps.
-

Social Media and Search Engines

- Chrome, Bing, Safari, Firefox, local (e.g. Chinese) browsers.
 - Facebook, Instagram, Twitter, Skype, WeChat, WhatsApp, Viber.
-

Programming Languages and Frameworks

- JavaScript, Java, Swift, C#, PHP, Python.
 - Angular, Spring, .NET core, J2EE.
-

Platforms, Operating Systems and System Tools

- iOS, Windows, Linux, Android, app stores.
 - Active Directory, OpenLDAP, OpenSSL, Ping, Telnet.
-

Standards and Best Practices

- IETF RFCs, W3C HTML, Unicode CLDR, WHATWG.



Universal Acceptance

UA Readiness in 2020

- At a Glance -



9.7%

of email servers are potentially configured to support email addresses in local languages and scripts.



11%

of the top 1000 websites globally support email addresses in Arabic and Chinese.



98.3%

of the top 1000 websites globally support email addresses with short top-level domains.



测试@普遍接受-测试.世界

مشرف@اختبار-سجل.مصر

όνομα@παράδειγμα.eu

Technical UA Issues Identified for Remediation



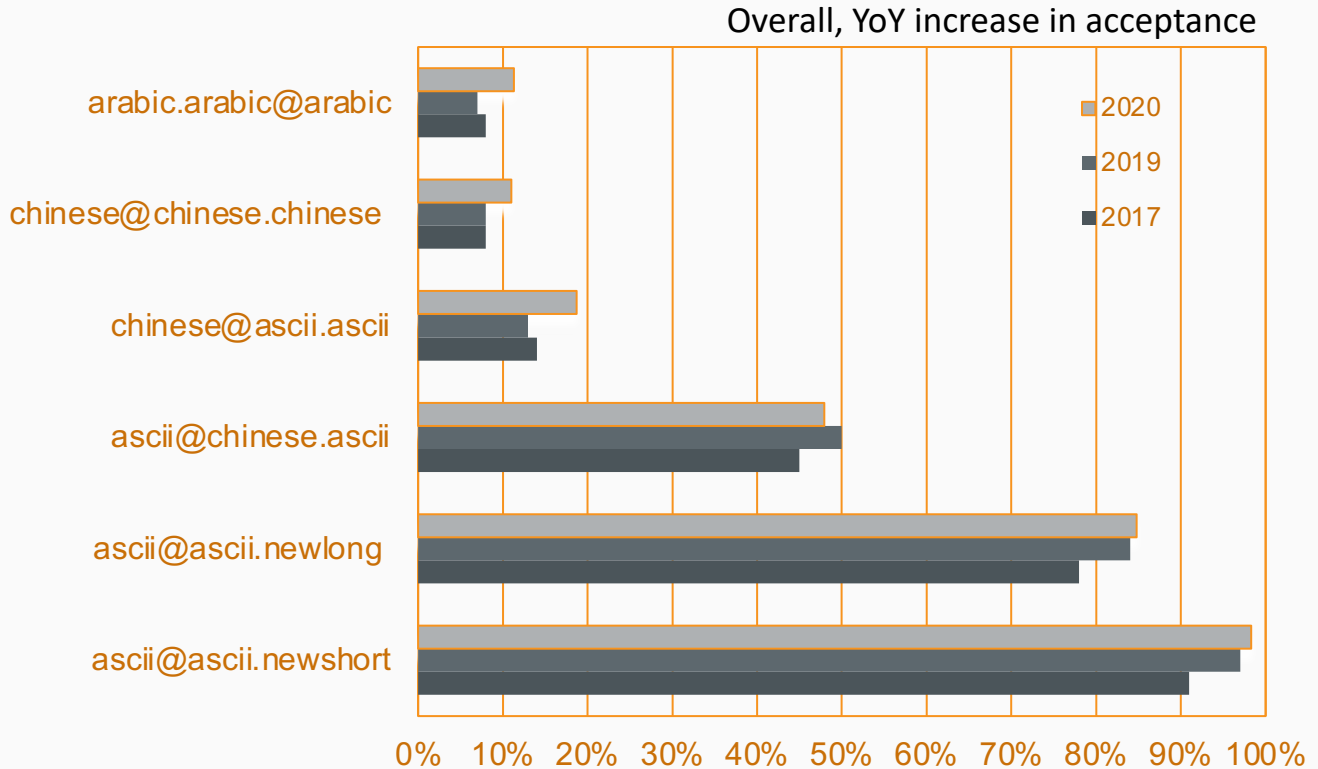
Universal Acceptance

Email Address Internationalization (EAI) Remediation

Mark Svancarek
Chair, EAI WG



Acceptance of Email Addresses by Top 1000 Websites Globally



Email Systems Stack for UA Consideration

Webmail Platforms

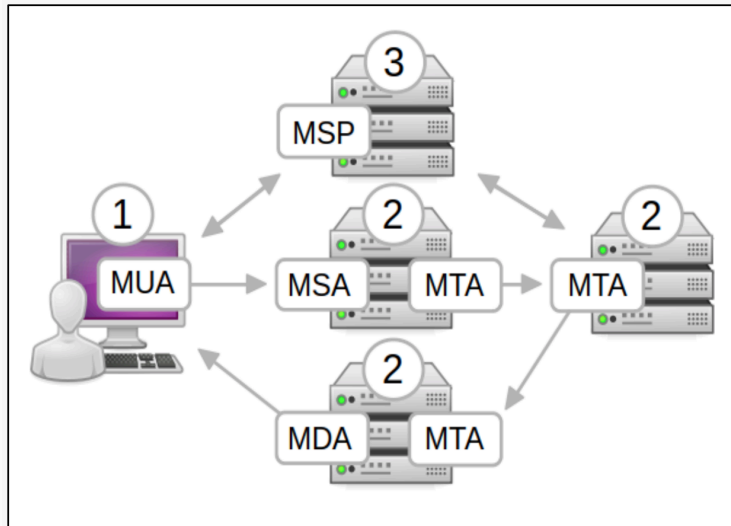
- Gmail
- Coremail
- Yandex

MXAs

- Axigen
- Courier
- Dovecot
- Postfix
- Zimbra

Components of Email Systems

- Mail User Agent (MUA)
- Mail Submission Agent (MSA) and Mail Transfer Agent (MTA)
- Mail Delivery Agents (MDA)
- Mail Service Provider (MSP)



Mail User Agents (MUA) EAI Readiness Testing 2020

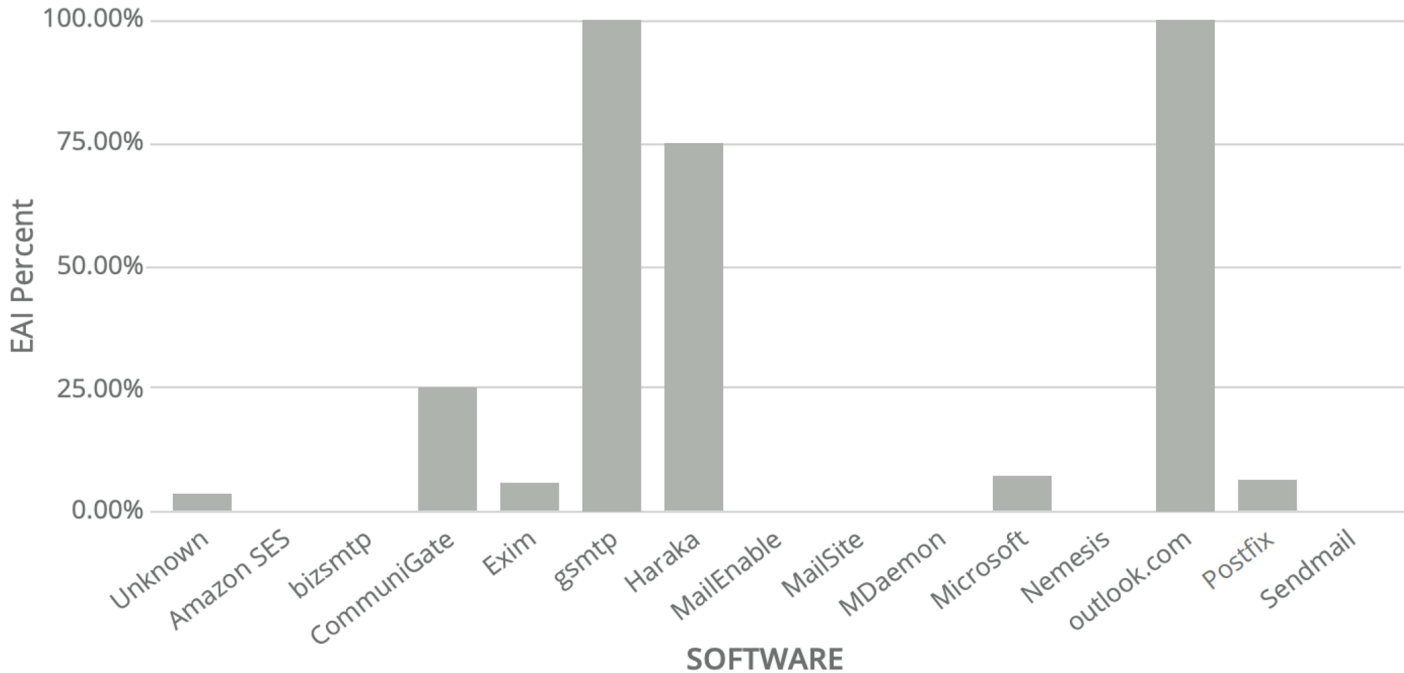
| | Apple Mail | Thunderbird | Outlook | Yandex | Coremail |
|--|----------------|----------------|-----------|---------------------------------|----------|
| Client receives messages from EAI addresses | Yes | Sometimes | Yes | No | Yes |
| Client sends messages to EAI addresses | No | No | Yes | Sometimes | No |
| Unicode addresses displayed in Unicode (sent and received) | Yes (received) | Yes (received) | Mostly | Some (displays only local part) | No |
| Address book handles EAI addresses normally (save, send, search) | Some | Yes | Mostly | Yes | Yes |
| Mailto links of EAI addresses handled normally (sent and received) | No | Sometimes | Yes | Yes | No |
| Subject line can be Unicode | Yes | Yes | Yes | Yes | Yes |
| Folders can be named with Unicode | Yes | Yes | Yes | Yes | NA |
| Message headers are Unicode where appropriate | NA | No | No | No | NA |
| EAI addresses can be set up to receive and send mail using IMAP | No | No | Sometimes | No | No |
| EAI addresses can be set up to receive and send mail using POP | No | No | Sometimes | No | No |
| Username can be Unicode | No | No | Sometimes | No | No |
| Server names and domains can be Unicode | No | No | Yes | No | No |
| Server names and domains can be A-label | No | No | No | NA | NA |

Webmail Services EAI Readiness Testing 2020

| | Roundcube | MS Outlook.com | Coremail | Yandex |
|--|-----------|----------------|-----------|-----------|
| Client receives messages from EAIs | Yes | Yes | Yes | No |
| Client sends messages to EAIs | Yes | Yes | No | Sometimes |
| Unicode addresses displayed in Unicode (sent and received) | Mostly | Yes | Yes | Yes |
| Address book handles EAIs normally (save, send, search) | Yes | Sometimes | Yes | Yes |
| Mailto links of EAIs handled normally (sent and received) | No | Yes | Sometimes | Yes |
| Subject line can be Unicode | Yes | Yes | Yes | Yes |
| Folders can be named with Unicode | Yes | Yes | Yes | Yes |
| Message headers are Unicode where appropriate | Sometimes | No | No | No |
| EAIs can be set up to receive and send mail using IMAP | Yes | No | No | No |
| EAIs can be set up to receive and send mail using POP | NA | No | No | No |
| Username can be Unicode | Yes | No | No | No |
| Server names and domains can be Unicode | Yes | No | No | No |
| Server names and domains can be A-label | Yes | No | No | No |

EAI Readiness of Mail Servers

Server % EAI Ready



Technology Remediation

Satish Babu

Chair, Technology WG



Universal Acceptance

UA Readiness of Browsers

In 2017, a study was conducted to review the [UA of Popular Browsers](#) (UASG016 report).

A new study will be conducted in 2020-2021.

- Browsers in Desktop Systems

Browser developers are making progress toward becoming UA-ready.

| Result key: Y - Passes all tests A - Fails to load the correct page B - Fails to display URL correctly in location bar C - Fails to display URL correctly in title bar | | | | | | | | |
|--|--|--------|---------|-------|--------|------|----|---------|
| Test ID | Test Data | Chrome | Firefox | Opera | Safari | Edge | IE | Vivaldi |
| 1 | ua-test.link | Y | Y | Y | Y | Y | Y | Y |
| 2 | ua-test.technology | Y | Y | Y | Y | Y | Y | Y |
| 3 | 普遍接受-测试.top | Y | Y | Y | Y | Y | Y | B |
| 4 | ua-test.世界 | Y | Y | Y | Y | Y | Y | B |
| 5 | 普遍接受-测试.世界 | Y | Y | Y | Y | Y | Y | B |
| 6 | 普遍接受-测试.世界 | Y | A | Y | A | Y | Y | A |
| 7 | ua-test.xn---rhqv96g | Y | Y | Y | Y | Y | Y | B |
| 8 | xn----f38am99bqvcd5liy1cxsg.top | Y | Y | Y | Y | Y | Y | B |
| 9 | xn----f38am99bqvcd5liy1cxsg.xn---rhqv96g | Y | Y | Y | Y | Y | Y | B |
| 10 | اختبار-القبولالعالمي.top | C | Y | C | C | C | Y | B |
| 11 | اختبار-القبولالعالمي.شبكة | Y | Y | Y | Y | Y | Y | B |
| 12 | ua-test.link/我的页面 | Y | Y | Y | Y | Y | Y | Y |
| 13 | ua-test.technology/我的页面 | Y | Y | Y | Y | Y | Y | Y |
| 14 | 普遍接受-测试.top/我的页面 | Y | Y | Y | Y | Y | Y | B |
| 15 | ua-test.世界/我的页面 | Y | Y | Y | Y | Y | Y | B |
| 16 | 普遍接受-测试.世界/我的页面 | Y | Y | Y | Y | Y | Y | B |
| 17 | 普遍接受-测试.世界/我的页面 | Y | A | Y | A | Y | Y | B |

UA Readiness of Browsers

- Browsers in Mobile Devices

The same browser showed significant variations when run on different mobile platforms.

| Result key: Y - Passes all tests A - Fails to load the correct page B - Fails to display URL correctly in location bar C - Fails to display URL correctly in title bar D,E - Other non-failing issues seen | | | | | | | | | |
|---|---|---------|-----|---------|-------|---------|-------|--------|-----------------|
| Test ID | Test Data | Chrome | | Firefox | | Opera | | Safari | Samsung Browser |
| | | Android | iOS | Android | iOS | Android | iOS | iOS | Android |
| 1 | ua-test.link | Y | Y | Y | Y | Y | Y | Y | Y |
| 2 | ua-test.technology | Y | Y | Y | Y | Y | Y | Y | Y |
| 3 | 普遍接受-测试.top | Y | Y | Y | B | B | B | Y | Y |
| 4 | ua-test.世界 | Y | Y | Y | B | B | B | Y | Y |
| 5 | 普遍接受-测试.世界 | Y | Y | Y | B | B | B | Y | Y |
| 6 | 普遍接受-测试.世界 | Y | Y | A | A | B | A | A | Y |
| 7 | ua-test.xn--rhqv96g | Y | Y | Y | B | B | B | Y | Y |
| 8 | xn----f38am99bqvcd5liy1cxsg.top | Y | Y | Y | B | B | B | Y | Y |
| 9 | xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g | Y | Y | Y | B | B | B | Y | Y |
| 10 | اختبار-القبولالعالمي.top | C | C | C | B + C | B + C | B + C | C | B |
| 11 | اختبار-القبولالعالمي.شبكة | Y | Y | Y | B + C | B + C | B + C | Y | Y |
| 12 | ua-test.link/我的页面 | Y | Y | B | B | Y | B + E | Y | E |
| 13 | ua-test.technology/我的页面 | Y | Y | B | B | Y | B + E | Y | E |
| 14 | 普遍接受-测试.top/我的页面 | Y | Y | B | B | B | B + E | Y | E |
| 15 | ua-test.世界/我的页面 | Y | Y | B | B | B | B + E | Y | E |
| 16 | 普遍接受-测试.世界/我的页面 | Y | Y | B | B | B | B + E | Y | E |

UA Readiness of Programming Languages and Frameworks

| Language | Lib Name | Compliance on dataset (%) | Datasets |
|----------|-------------------|---------------------------|------------|
| c | libcurl | 84.3 | HEs |
| c | libidn2 | 95.2 | LA2U ,LU2A |
| csharp | mailkit | 84.3 | HEs |
| csharp | microsoft | 83.9 | LA2U ,LU2A |
| go | idna | 79 | LA2U ,LU2A |
| go | mail | 100 | HEs |
| go | smtp | 19.6 | HEs |
| java | commons-validator | 85.5 | HEs ,HDns |
| java | guava | 77.8 | HDns |
| java | icu | 93.5 | LA2U ,LU2A |
| java | jakartamail | 82.4 | HEs |
| java | jre | 71 | LA2U ,LU2A |

Legend (UASG018A)

UA-ready

UA-ready but
developer needs to
be careful

Not UA-ready

UA Readiness of Programming Languages and Frameworks

| Language | Lib Name | Compliance on dataset (%) | Datasets |
|----------|-----------------|---------------------------|------------|
| js | idna-uts46 | 85.5 | LA2U ,LU2A |
| js | nodemailer | 84.3 | HEs |
| js | validator | 94.2 | HEs ,HDns |
| python3 | django_auth | 48.1 | HEs ,HId |
| python3 | email_validator | 86.3 | HEs |
| python3 | encodings_idna | 67.7 | LU2A ,LA2U |
| python3 | idna | 100 | LA2U ,LU2A |
| python3 | smtplib | 84.3 | HEs |
| rust | idna | 87.1 | LA2U ,LU2A |
| rust | lettre | 7.8 | HEs |

Legend (UASG018A)

UA-ready

UA-ready but
developer needs to
be careful

Not UA-ready

UA Readiness of Networking Command Line Tools

- Operating systems use command line tools for system management and program development.
- Many of these tools operate on domain names, while a few do on email addresses.
- Most of the tools accept domain names and then use them in their operation, which includes looking them up in the Domain Name System (DNS).

| Tool | MacOS 10.14 (BSD/Mach) | FreeBSD 12 (BSD) | Ubuntu 18 (linux) | Centos 7 (linux) | Windows 10 |
|------------|------------------------|------------------|-------------------|------------------|------------------|
| host | No | No | No | Yes*(D) | |
| ping | Yes* | No | Yes*(D) | Yes*(D) | Yes ¹ |
| ping6 | Yes* | No | Yes*(D) | Yes(D) | |
| tracert | Yes* | No | Yes*(D) | Yes(D) | |
| tracert6 | Yes* | No | Yes*(D) | Yes(D) | |
| dig | No | | No | Yes*(D) | |
| nslookup | No | | No | Yes*(D) | No |
| telnet | Yes* | No | No | | |
| openssl | Yes* | No | Yes* | No | |
| gnutls-cli | | Yes | Yes | | |
| tracert | | | | | Yes |

Legend (UASG024)

Yes – accepts, validates, and processes.

Yes(D) - means it also displays domain names and shows IDNs as U-labels.

Yes - means that the command accepts IDNs but processes them with IDNA2003 rather than IDNA2008.

An empty box means that the system is not distributed with that tool.

Community Discussion - Resolving Universal Acceptance Issues



Universal Acceptance

Workshop

- Remediation Strategy
- Government Approach

Remediation Strategy and Approaches

- Resolving UA readiness issues – approaches and options for discussions.
 1. Remediation as a result of a gap analysis research.
 2. Tech industry stakeholder engagement (e.g., Apple, Mozilla, Amazon, Github, etc.)
 - ICANN org with community support.
 3. Tech enabler engagement – standards organizations (e.g., WHATWG, W3C, IETF, etc.)
 - Community-led approach by members actively engaged with organizations that set UA-related standards and best practices.

Questions and Answers (Q&A)

Get involved!

- Follow, share, like and engage with the UASG on social media, and use the UASG hashtag in relevant posts: #Internet4All
 - Twitter: [@UASGTech](https://twitter.com/UASGTech)
 - LinkedIn: <https://www.linkedin.com/company/uasgtech/>
 - Facebook: <https://www.facebook.com/uasgtech/>
- Join the UA Discuss group: ua-discuss@icann.org
- Report a problem if you find an application or webpage that is not UA-ready: <https://uasg.tech/global-support-center/>

спасибо 谢谢
GRACIAS 谢谢

THANK YOU

ありがとうございました MERCI

DANKE धन्यवाद

شُكْرًا OBRIGADO