

An Introduction to Universal Acceptance

Don Hollander/UA & the Next Round – 23 Feb 2017



Universal Acceptance

UA in a Nutshell

Universal Acceptance (UA) ensures that all domain names and email addresses can be used by all Internet-enabled applications, devices and systems.

Key Points...

- UA is a software issue
 - Developers not keeping up with standards
- EAI
 - IDNs
 - Unicode in Mailbox Names

Key Points...

- New TLDs
 - Length
 - Newness
 - IDNs
- 2nd level IDNs also affected: e.g. ngāpukapuka.nz

Background Reading...



Anatomy of an email address

username@example.com

测试5@普遍接受-测试.世界

- * *Username/ 测试5*
 - * *Mailbox name*
 - * *Can be in ASCII or Unicode*
- * *Second level domain name (example/ 普遍接受-测试)*
 - * *Can be ASCII or Unicode.*
 - * *Unicode can be represented as Unicode or Punycode*
- * *Top Level Domain name (.com/ .世界)*
 - * *Can be ASCII or Unicode*
 - * *Unicode can be represented as Unicode or Punycode*
 - * *Can be 2 to 63 characters long*
 - * *Can ONLY be from an authoritative list that is dynamic and has more than 1,000 choices*

Five Verbs to UA Readiness



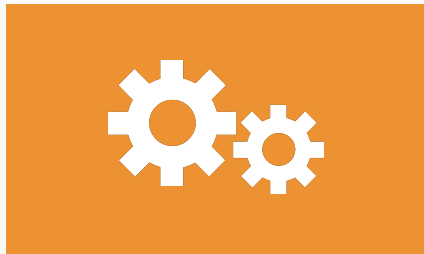
Accept



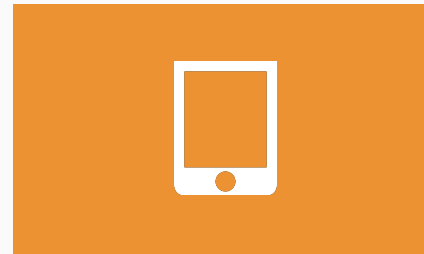
Validate



Store



Process



Display

Our Target Audiences

Doers

Developers & Systems Architects

Directors

CIOs and senior IT Management

Influencers

C suite, Thought Leaders, Government Ministers and Officials*

Why Bother

- * Enablement for culture, society and economics
- * Responsibility to comply with standards
- * UA results in better User eXperience (UX)

Principles of Universal Acceptance





The process by which an email address or domain name is received as a string of characters from a user interface, file or API.

UASG Recommendations

- * User interface elements must support:
 - * Unicode.
 - * Strings up to 256 characters.
- * ASCII Compatible Encoded text (“Punycode”) in place of Unicode.
 - * Unicode shown by default.
 - * Punycode text shown *only* when it provides a benefit.



The process by which an email address or domain name – received or emitted – is checked for syntax correctness.

UASG Recommendations

- * Easiest way to ensure all valid domain names are accepted.
- * Should not occur unless required. If yes:
 - * Verify TLD against authoritative table.
 - * Query domain name against DNS.
 - * Require repeated entry of email address.
 - * Validate characters - no “disallowed” code points.
 - * Limit to few, whole-label rules defined in RFCs
 - * If string contains ‘。’ convert to ‘.’

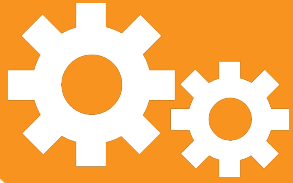


Store

The long-term and / or transient storage of domain names and email addresses.

UASG Recommendations

- * Apps / services should support Unicode
- * Information stored in UTF-8 whenever possible
- * Consider end-to-end scenarios before converting between A-Labels & U-Labels
 - * Consider storing in both formats
- * Clearly mark email addresses and domain names during storage

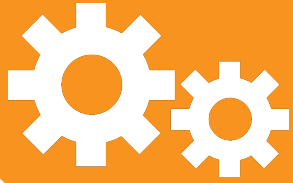


Process

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

- * Check code points not defined when application / service was created – shouldn't "break" user experience.
- * Use supported Unicode-enabled APIs.
- * Use latest IDNA Protocol & Tables documents for Internationalized Domain Names.
- * Process in UTF-8 wherever possible.

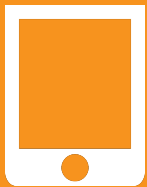


Process (continued)

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

- * Ensure numbers are handled as expected
- * Treat ASCII numerals & Asian ideographic number representations as numbers
- * Upgrade apps & servers/services together
- * Perform code reviews to avoid buffer overflow attacks

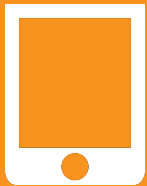


Display

Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

- * Display all Unicode code points supported by underlying operating system.
- * When developing app/service, or operating a registry, consider languages supported.
- * Convert non-Unicode data to Unicode before display.
- * End user should see “everyone.みんな” vs. “everyone.xn--q9jyb4c.”



Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

- * Display Unicode by default
- * Use Punycode text *only* when it provides a benefit
- * Consider that mixed-script addresses will become more common
- * Use Unicode IDNA Compatibility Processing to match user expectations
- * Be aware of unassigned & disallowed characters

Tools & Resources for Developers

Authoritative Tables:

- * <http://www.internic.net/domain/root.zone>
- * <http://www.dns.icann.org/services/authoritative-dns/index.html>
- * <http://data.iana.org/TLD/tlds-alpha-by-domain.txt>
- * See also SAC070: <https://tinyurl.com/sac070>

Internationalized Domain Names for Applications:

- * Tables: <https://tools.ietf.org/html/rfc5892>
- * Rationale: <https://tools.ietf.org/html/rfc5894>
- * Protocol: <https://tools.ietf.org/html/rfc5891>

Unicode:

- * Security Considerations: <http://unicode.org/reports/tr36/>
- * IDNA Compatibility Processing: <http://unicode.org/reports/tr46/>

Universal Acceptance
Steering Group info &
recent developments:
www.uasg.tech

Next Steps...

- * Read the documents at www.uasg.tech/documents
 - * UASG003 – Fact Sheet
 - * UASG005 – Quick Guide
 - * UASG007 – Introduction to UASG
 - * UASG011 – FAQs
- * Subscribe to the UASG Discussion list www.uasg.tech/subscribe
- * Get your own systems UA Ready
- * Spread the word...