JIG Final Report on Universal Acceptance of IDN TLDs

Date: November 15, 2013

This is a Final Report from the Joint ccNSO-GNSO IDN Group (JIG) on the recommendations for actions to be taken by ICANN and the ICANN community to address the issue of Universal Acceptance of IDN TLDs in support of the implementation of IDN gTLDs and IDN ccTLDs. The document incorporates the findings from the Initial Reportalong with the public comments received respectively:

- Initial Report published for public comments: January 6, 2012

- Draft Final Report published for Public comment period conducted: 25June – 16 August 2013

The comments received on its drat Final Report twas in support of the recommendations. The draft Final Report has therfore not been updated.

The JIG (Joint ccNSO-GNSO IDN Working Group) was created to discuss issues of common interest between the ccNSO and the GNSO on IDNs (Internationalized Domain Names), especially IDN TLDs. The JIG has identified 3 issues of common interest to date:
1. Single Character IDN TLDs
2. IDN TLD Variants
3. Universal Acceptance of IDN TLDs

This report is specific to issue 3. Universal Acceptance of IDN TLDs. This Final Report is submitted to the ccNSO and the GNSO councils respectively for their consideration and adoption according to their own rules and procedures.

1. Summary of Recommendations

A. Recommend IDN TLD operators (including IDN ccTLD, IDN gTLD and IDN gTLD Accredited Registrars) to support Universal Acceptance of IDN TLDs in their own systems

B. Allocate specific resources for the advocacy of Universal Acceptance beyond the development of informational materials and toolkits

C. Development of informative reference materials for new IDN TLDs (including gTLD and ccTLD) to handle issues of Universal Acceptance

D. Direct efforts, lead by staff, with the participation from the community, for further studies to investigate the scope of the issue and what other services or actions could be taken by ICANN to support the Universal Acceptance of IDN TLDs beyond outreach and awareness campaigns

2. ICANN Policy and Coordination Considerations

The following suggestions are not intended to be instructional, but are meant only to provide suggestions of how the JIG recommendations may be implemented.

Recommendation A:
For the implementation of Recommendation A, this document suggests that the ICANN IDN Guidelines be updated to include provisions for IDN TLD registries and registrars to support the Universal Acceptance of IDN TLDs within their own systems (i.e. for registration systems and services to accept name server records, child hosts, contact information with IDN TLDs).

Recommendation B:
This document recommends the ICANN board and staff to take into consideration this recommendation and include explicitly the advocacy of Universal Acceptance into the ICANN budget/strategic plan.

Recommendations C & D:
Since the launch of the new gTLD program, the staff team and efforts on Universal TLD Acceptance has become active. This document makes recommendations C & D as input for implementation through the staff team efforts. The document also recommends that the staff team work closely with the JIG on these matters to leverage the reach and knowledge from the community of IDN ccTLDs and IDN gTLDs (through the ccNSO and GNSO).

3. Discussion of Proposed Recommendations

A. Recommend for IDN TLD operators (including IDN ccTLD, IDN gTLD and IDN gTLD Accredited Registrars) to support Universal Acceptance of IDN TLDs in their own systems

In the course of the discussion regarding Universal Acceptance of IDN TLDs, while much of the issues concern systems outside of the direct remit of ICANN, the JIG identified one specific aspect that is directly within ICANN's purview and related to the TLD registries and registrars.

Some registries and registrars do not in their own systems support the use of IDN TLDs for data items such as nameserver records, child hosts, and/or contact (registrant, administrative, technical, billing) information which contains domain names (e.g. email addresses).

In order for other outreach efforts (beyond the ICANN community) to be effective, it is important that Universal Acceptance is properly supported by systems within the community.

As such, the JIG recommends that IDN TLD providers, including IDN ccTLDs, IDN gTLD Registries and IDN gTLD Registrars support Universal Acceptance of IDN TLDs within their own registry/registrar systems to accept IDN TLDs for nameserver records, child hosts and contact email addresses.

B. Allocate specific resourcesfor the advocacy of Universal Acceptance beyond the development of informational materials and toolkits

Universal and consistent ability to use TLD's, whether existing, IDN ccTLD's, or new gTLD's are critical factors to foster and ensure competion, consumer trust and choice in the DNS marketplace. Without Universal Acceptance, some users may not be able to access or utilize some TLDs, which in turn cause confusion and loss in consumer trust for a TLD and therefore DNS. Advocacy and implementation of Universal Acceptance of TLDs is therefore imperative.

As such, the JIG recommends the Councils to urge ICANN to highlight Universal Acceptance of IDN TLDs in its new Strategic Plan (either as an indicator or objective)[1] and as a result feed into the newly envisioned Management Plan, and Budget and Ops Plan.

The distinction between Universal Acceptance of IDN TLDs and the Universal Acceptance of TLDs is partly based on the scope of the JIG and partly on the scope of the issue spanning across gTLDs and ccTLDs. Generally speaking, ASCII ccTLDs (even the newly delegated ASCII ones) experience much less acceptance issues than gTLDs (especially those longer than 3 characters). The advent of IDN ccTLDs forms a unifying front for the entire community of TLDs regarding the issue of Universal Acceptance. Therefore, the JIG recommends ICANN to prioritize the advocacy of Universal Acpetance of IDN TLDs and allocate specific resources for coordinating community wide outreach efforts.

C. Development of informative reference materials for new IDN TLDs (including gTLD and ccTLD) to handle issues of Universal Acceptance

New TLD operators (including new IDN ccTLDs and new IDN gTLDs) may not be fully aware of the Universal Acceptance issues when they are launching their TLDs. For example the acceptance of their TLDs in browsers, applications, at ISP systems, websites (e.g. sign up, profile URLs, etc.), databases, spam filters, etc.

Staff should direct efforts to draw on and consolidate the experience from earlier launches of TLDs (including gTLDs and ccTLDs) to produce a set of informative reference materials to assist new TLD operators. These guidelines should include major services and industry lists for which known issues of Universal Acceptance is an issue or requires update, as well as best practices on reaching out to such lists for their update and responses to end users, registrants and resellers when they are faced with non-acceptances of their new TLDs.

In the development of such informative reference materials, staff should consult with the community on:
- What the scope of the resource (as regards exact subject matter and audience) should be
  - For registries
  - For registrars
  - For registrants
  - For Internet users
- Creating and maintaining an archive of past experiences and practices, e.g.:
  - E.g. Wiki based

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[1]In accordance with the newly envisioned Strategic and Operational Planning Process, see: http://www.icann.org/en/news/announcements/announcement-28jan13-en.htm

- How best to keep the materials updated
  - Regularly updated proactively by staff
  - Open to contributions by the community
- How best to publicize such a resource

The JIG and its members are prepared, and believe it is reasonably within scope to, assist and provide guidance to staff in the development and maintenance of such materials.

Furthermore, for the avoidance of doubt, this recommendation especially cautions against normative references, checklists or guidelines for which evaluation of registries and registrars would be based on or subjected to. Rather, materials should be informational. Nevertheless, over time, the level of Universal Acceptance in general may be considered and presented as well.

D. Direct efforts, lead by staff, with the participation from the community, for further studies to investigate the scope of the issue and what other services or actions could be taken by ICANN to support the Universal Acceptance of IDN TLDs beyond outreach and awareness campaigns

To date, efforts on Universal Acceptance advocacy from ICANN have been relatively passive and scattered. Basic materials and a technical toolkit has been developed and promoted at: http://www.icann.org/en/resources/tld-acceptance and during ICANN meetings. This recommendation suggests ICANN staff team to take the lead on a more concerted campaign and proactive measures to advocate Universal Acceptance, especially on the Universal Acceptance of IDN TLDs.

This should be in-keeping with the strategic directives of increasing TLD options in more languages and the rolling-out of new gTLDs including IDNs, and the overarching goal of enhancing competition, consumer trust and consumer choice.

In considering priorities of efforts (including the importance of the Universal Acceptance program over other priorities at ICANN), it is important to consider the aims of this work and what issues Universal Acceptance is trying to prevent. The following provides a starting point for consideration:

- We want IDNs to work technically. For example, we want IDN URLs to resolve as expected by the user and IDN e-mails to be sent and received without (bouncing or getting lost).
- We want IDNs to be perceived as safe to use. (We do not want them to be perceived as prone to scams. We do not want unnecessary delays.)
- We want up-to-date authoritative versions of toolkits to be available centrally. (We do not want multiple versions of toolkits doing the same thing scattered all over the Internet.)
- We want high quality information materials.

Drawing from the IDN Variant TLD program reports, this document recommends the following priorities, in order of importance:

1. Universal Acceptance of IDN TLDs by TLD Registries and Registrars
   a. Consistency of IDN implementation, including character repertoires for IDN scripts and language subsets as well as IDN Variant policies

b. Requiring IDN TLD registries and registrars support Universal Acceptance of IDN TLDs across its registration platform, including the support for IDN Variants in IDN TLDs with IDN Variants

c. ICANN should develop, to the extent possible, minimal, simple and consistent guidelines for IDN TLD registries and registrars including IDN lifecycle and Label Generation Ruleset (LGR) policies

2. Development of Educational & Informational Toolkits
   a. Create educational materials on the use and impact of IDN TLDs, including IDN Variants for different user communities (including in various languages for various types of users: (i) End Users, (ii) Registrants, Registrars and Registries, and (iii) the Technical Community)
   b. Maintain a repository for level of Universal Acceptance (and/or non-acceptance) as well as a repository for IDN policies, including IDN Variant policies for the root zone and IDN TLDs and make it programmatically process-able where possible
   c. Guidelines for evaluating the level of implementation of Universal Acceptance by TLD Registries and Registrars, including the support for IDN Variants
   d. Guidelines for maintaining consistent registration data requirements for IDN TLDs and IDN registrations at the TLD Registry, including data requirements for IDN Variants

3. Engaging with Community beyond ICANN
   a. ICANN to define technical requirements and engage with the technical community and standards organizations, such as the IETF, to determine how IDN TLDs, including IDN Variant TLDs, could be consistently implemented
   b. ICANN should also engage with application developers, especially communities where industry standards are driven
   c. ICANN should convene relevant experts involved in domain name disputes to determine any new issues introduced by IDN TLDs, including IDN Variants and update existing dispute resolution processes accordingly

In the course of the discussions at the JIG and from comments received for this work, a number of initiatives were identified and considered worthwhile for further exploration:

1. **Surveys:** the JIG identified that it may be useful to utilize surveys to consolidate the knowledge on the subject as well as to understand the level of awareness in the larger Internet community on the Universal Acceptance issue. The consolidated knowledge from the industry on the subject would assist in the production of checklists and guidelines for new TLD (including new IDN ccTLD and new IDN gTLD) operators. The broader survey could provide useful information and indication on what and where to further prioritize efforts for.

2. **New Services to be maintained by ICANN:** the JIG also identified a question of whether the emerging industry standards may cause issues in the future as many new TLDs (including IDN ccTLDs and IDN gTLDs) are added to the root more frequently. More importantly, if they are not fully synchronized with the root zone database, it may jeopardize the principle of a unique and consistent authoritative root system for the DNS. In relation to this discussion, a further question was raised on whether such emerging industry services may be a result of missing services from the root or the IANA TLD database? For example, should IANA collect and provide information of the list of second level registries operated by existing TLD registries?

3. **Establishing Liaisons with Emerging Industry Standards:** besides evaluating whether additional services should be provided by ICANN to serve the purposes of emerging industry standards, ICANN should also consider engaging with and establishing liaisons with such emerging industry standards to ensure oversight and consistency with the root and to maintain the single authoritative root principle.

4. **Advocacy of Universal Acceptance:** advocacy should reach beyond the ICANN community and also beyond the critical Internet infrastructure community, especially into application providers, website and database managers as well as the broader user community.

Finally, the JIG and its members are prepared to provide assistance to the staff team in the efforts and look forward to working closely and to liaise back to the gTLD and ccTLD operators for their participation in many of these works.

4. Background & Related Works

The issue of the Universal Acceptance of TLDs (Top-Level Domains) is not new. The introduction of new gTLDs, especially those that are longer than 3 characters exposed this Universal Acceptance issue in the 2000 experimental expansion round, and was continued to be felt through the 2004 sTLD extension round. The introduction of IDN ccTLDs through the IDN ccTLD fast track in 2010 further exposed the issue and also made this into an issue of common interest between ccTLDs and gTLDs.

In August 2003, during the public comment forum for consideration of the opening of the sTLD extension round, the SSAC (Security and Stability Advisory Committee) submitted a report on "Support Of New Top-Level DomainsBy Internet Infrastructure Operators And Application Providers" (http://forum.icann.org/mtg-cmts/stld-rfp-comments/general/doc00004.doc), the report discussed compatibility problems found with the installed base of software used by Internet infrastructure operators about the introduction of new TLDs, and made 6 recommendations:

1. ICANN should develop an advisory regarding support for new TLDs for display on their website, and the GNSO constituencies should publicise this advisory through their membership and customer bases.

2. ICANN should recommend that the IAB consider issuing an informational RFC advising of the issue, and publicising this through the IETF technical community.

3. Internet infrastructure providers that have their own customised software for Internet service provision should test the capability of the software to support new TLDs, and correct problems quickly where they are found.

4. Internet software application developers should be encouraged to review their software for support of new TLDs. Where problems are found, application developers should upgrade their software, and provide these updates to their user base.

5. A central repository of known commonly used software that has compatibility problems (e.g., DNS resolver software used by common operating systems) with new TLDs, and instructions for how to upgrade the software should be created. This repository would facilitate Internet infrastructure

providers and software application developers to provide necessary software updates to users of the Internet to resolve known compatibility issues.

6. ICANN should examine compatibility problems with the introduction of new TLDs in 2001 as a topic in its Proof of Concept study.

In response to 1, a TLD Acceptance forum was created by ICANN in October 2004 (http://forum.icann.org/lists/tld-acceptance/) for discussion on the subject and a website was launched in March 2006 for "Universal Acceptance of All Top-Level Domains" (http://www.icann.org/en/topics/TLD-acceptance/). In support of 3 and 4, ICANN also released a TLD Verification Tool in December 2006, which was further updated in March 2007 (http://www.icann.org/en/announcements/announcement-2-22mar07.htm).

 In response to 2, an informational RFC was published in February 2004 (RFC3696: Application Techniques for Checking and Transformation of Names -- http://www.ietf.org/rfc/rfc3696).

In response to 6, the subject was included in the Comprehensive Evaluation of the Introduction of the .aero, .biz, .coop, .info, .museum, .name and .pro gTLDs(http://www.icann.org/en/announcements/announcement-31aug04.htm) which was published in August 2004, which recommended "*the designation of a member of ICANN Staff to develop an action plan for next steps. These steps might include (i) assessing the current dimensions of the problem; (ii) monitoring its improvement; and (iii) publicizing any shortcomings.*"

In 2006, in the drive to develop better user experience of domain utilization on the browser for grouping, anticipating, analysing and sorting domain names and cookies, an initiative was started (https://bugzilla.mozilla.org/show_bug.cgi?id=342314) in the Mozilla discussions, which eventually culminated into the Public Suffix List project (http://publicsuffix.org/). The list is developing into an industry reference with Firefox, Google Chrome as well as Opera implementing the list for various functionalities, along with other broadly utilized libraries and toolkits (http://publicsuffix.org/learn/). Another well referenced listing can be found at the List of Internet top-level domains entry at Wikipedia (http://en.wikipedia.org/wiki/List_of_Internet_top-level_domains), since 2004.

Another initiative, also developed from Mozilla discussions and relevant to IDN TLDs is the Mozilla IDN-Enabled TLD list project (http://www.mozilla.org/projects/security/tld-idn-policy-list.html) initiated in March 2005 (https://bugzilla.mozilla.org/show_bug.cgi?id=286534) as a response to concerns of homographic attacks such as phishing names utilizing IDNs.

Besides the development of IDN standards (http://datatracker.ietf.org/wg/idnabis/charter/), policies and guidelines (http://www.icann.org/en/topics/idn/implementation-guidelines.htm), the development of Internationalized Resource Identifiers (IRI: http://www.w3.org/International/articles/idn-and-iri/) as well as Internationalized Email Addresses (EAI: http://datatracker.ietf.org/wg/eai/charter/) at W3C and IETF respectively also.

In the discussion of the Universal Acceptance of TLDs, another related topic is that of a Unique Authoritative Root. On this subject, the IAB published an informational RFC on IAB Technical Comment on the Unique DNS Root (RFC 2826: http://www.ietf.org/rfc/rfc2826) to assert the importance of a single unique root:

> *To remain a global network, the Internet requires the existence of a globally unique public name space. The DNS name space is a hierarchical name space derived from a single, globally unique root. This is a technical constraint inherent in the design of the DNS. Therefore it is not technically feasible for there to be more than one root in the public DNS. That one root must be supported by a set of coordinated root servers administered by a unique naming authority.*

To further assert its commitment in a Unique Authoritative Root, an Internet Coordination Policy was developed at ICANN (ICP3: A Unique, Authoritative Root for the DNS -- http://www.icann.org/en/icp/icp-3.htm)

Also, during the discussions for the other 2 issues of common interest identified by the JIG, and from public comments (for example in the second part of: http://forum.icann.org/lists/jig-initial-report/msg00001.html) received for the Reports on Single Character IDN TLDs, it is also clear that the issue of Universal Acceptance of IDN TLDs is one which is critical for the successful adoption of IDN ccTLDs and IDN gTLDs.

Finally, the IDN Variant TLD Programteam report on "Examining the User Experience Implications of Active Variant TLDs"(http://www.icann.org/en/resources/idn/variant-tlds/active-ux-21mar13-en.pdf) identified a number acceptance issues related to IDN Variants.

Appendix A: Working Group Members

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Individuals subsribed to the email list, at invitation of the co-chairs
Andrew Sullivan
Marc Blanchet
Siavash Shahshahani
Alan Tan
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Appendix B: Report of Public Comments

- Pubic Forum Initial Report on Universal Acceptance of IDN TLD's (6 January 2012- 13 April 2012

http://www.icann.org/en/news/public-comment/universal-acceptance-idn-tlds-06jan12-en.htm

- Public Forum Draft Final Report (25 June 2013-16 August 2013)
http://www.icann.org/en/news/public-comment/idn-tld-acceptance-final-25jun13-en.htm