

# At-Large Workspace: Recommendations for Managing IDN Variant Top-Level Domains

Public Comment Close	Statement Name	Status	Assignee (s)	Call for Comments Open	Call for Comments Close	Vote Open	Vote Close	Date of Submission	Staff Contact and Email	Statement Number
17 September 2018	<a href="#">Recommendations for Managing IDN Variant Top-Level Domains</a>	<div>ADOPTED</div> 15Y, 0N, 0A	Satish Babu	20 August 2018	26 August 2018	17 September 2018	20 September 2018	17 September 2018	Sarmad Hussain <a href="mailto:sarmad.hussain@icann.org">sarmad.hussain@icann.org</a>	AL-ALAC-ST-0918-02-01-EN

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## Brief Overview

### Purpose:

Recommendations for managing Internationalized Domain Name (IDN) variant labels for top level domains (TLDs) have been developed by ICANN organization. The relevant materials along with the recommendations are being published to seek community feedback for finalizing them.

### Current Status:

The community has identified a need for IDN variant TLDs; however, the ICANN Board resolved on 25 September 2010 that "no variants of gTLDs will be delegated ... until appropriate variant management solutions are developed." Subsequent work by ICANN organization and the community led to the identification of two issues: (i) there is no accepted definition for variant TLDs, and (ii) there is no 'variant management' mechanism for TLDs. For the first issue, the Root Zone Label Generation Rules (RZ-LGR) Procedure was developed with the support of the community and adopted by the ICANN Board on 11 April 2013 for implementation. The Procedure has been implemented and RZ-LGR has been developed for six scripts, and other scripts are being added as their proposals are finalized by the relevant script communities. For the second issue, ICANN organization has undertaken a detailed examination to develop a set of recommendations on variant management mechanisms for TLDs, which will be finalized based on the community input.

### Next Steps:

The finalized recommendations will be presented to the ICANN Board, anticipated in March 2019. At that time, the ICANN Board will be requested to consider these recommendations to allow for implementing IDN variant TLDs.

## Section I: Description and Explanation

The Board resolved in 2010 for ICANN organization to look into the management mechanisms for IDN Variant TLDs, to address relevant and complex linguistic, technical and policy issues. The subsequent work undertaken by ICANN organization and the community identified two challenges: (i) there is no accepted definition for variant TLDs, and (ii) there is no 'variant management' mechanism for TLDs.

To resolve the first issue, the Procedure to Develop and Maintain the Label Generation Rules for the Root Zone in Respect of IDNA Labels (RZ-LGR Procedure) was developed in collaboration with the community. Based on the direction of the ICANN Board in 2013, ICANN undertook this procedure to develop RZ-LGR. Eight script communities have finalized their proposals, from which Arabic, Ethiopic, Georgian, Khmer, Lao and Thai script proposals have been integrated into its second version, RZ-LGR-2. Many other script communities are also active and developing proposed rules. Further, a specification to encode these linguistic details into a formal machine-readable format has also been developed and released by IETF as standards track RFC 7940: Representing Label Generation Rulesets Using XML. A LGR tool has also been developed to create, use and manage the LGRs, and is available for the community online as well as for download with an open source license. The process, and the label generation rules for the root zone that result, produce variant TLD labels that are candidates for allocation and possible delegation.

To address the second issue, regarding a variant management mechanism for TLDs, it is necessary for the ICANN community to develop the policies and procedures that govern withholding, allocating and possibly delegating such variant TLD labels. This public comment period presents the following materials for review and feedback of the community, cumulatively as a proposal for the management mechanism for the IDN Variant TLDs.

- [1. IDN Variant TLD Implementation – Executive Summary](#)
- [2. IDN Variant TLD Implementation – Motivation, Premises and Framework](#)
- [3. IDN Variant TLD Implementation – Recommendations and Analysis](#)
- [4. IDN Variant TLD Implementation – Rationale for RZ-LGR](#)
- [5. IDN Variant TLD Implementation – Risks and their Mitigation](#)
- [6. IDN Variant TLD Implementation – Appendices \(A: Definitions, B: Use ofROID, C: Limiting Allocated Variant TLDs\)](#)

These documents will be finalized based on feedback from the community, to be presented to the ICANN Board for consideration in response to its 2010 resolution.

Specific feedback is sought on the following questions:

1. The rationale for the RZ-LGR requires strictly adhering to the IDN variant label sets defined by the community through the RZ-LGR. Is this a reasonable pre-requisite for implementing IDN Variant TLDs?
2. Do the proposed recommendations appropriately address the management and implementation of the IDN Variant TLDs?
  - a. Do any suggested recommendations need to be changed? Why?
  - b. Are any additional recommendations needed?
3. Does the analysis suitably cover the impact of the recommendations on existing procedures for IDN ccTLDs and IDN gTLDs? Is there alternate analysis for certain cases? Are there any additional impacts on the procedures not identified?
4. Which (if any) of the recommendations require policy consideration by GNSO and ccNSO, whereas the remaining would only have an impact on procedures?
5. To prevent the permutation issue which can be introduced by using variant labels, as identified by SSAC, how may the allocated IDN Variant TLD labels be limited? Are the mechanisms suggested in Appendix C appropriate? What other factors may also be relevant?
6. Are the risks and their mitigation measures sufficiently comprehensive? Are there any additional risks? Should there be different or additional mitigation measures?

## Section II: Background

Internationalized Domain Names (IDNs) enable people around the world to use domain names in local languages and scripts. Some script communities have identified that technically distinct domain labels may be considered indistinguishable or interchangeable with other domain labels, referred to as IDN variant labels. The IDNs in Applications (IDNA) 2008 standard, while stipulating how to use domain names in multiple scripts, also reflects on extra measures which are needed to manage confusability. RFC 5890, suggests that "DNS zone administrators may impose restrictions, beyond those imposed by DNS or IDNA, on the characters or strings that may be registered as labels in their zones. Because of the diversity of characters that can be used in a U-label [using Unicode standard] and the confusion they might cause, such restrictions are mandatory for IDN registries and zones even though the particular restrictions are not part of these specifications." It is further explained that "DNS zone administrators may impose restrictions ... that try to minimize characters that have similar appearance or similar interpretations." It is re-iterated in RFC 5891 that "Registries at all levels of the DNS, ... [including] the top level, are expected to establish policies about label registrations," specifically pointing to the rationale in RFC 5894 that "registries should develop and apply additional restrictions as needed to reduce confusion and other problems ... For many scripts, the use of variant techniques ... may be helpful in reducing problems that might be perceived by users."

Some IDN ccTLD and new gTLD applicants have indicated that the community may consider different labels as variants of each other. However, due to lack of a clear definition or a solution to implement them, the ICANN Board resolved on 25 September 2010 that "no variants of gTLDs will be delegated through the New gTLD Program until appropriate variant management solutions are developed." The resolution further directs ICANN staff to develop "an issues report identifying what needs to be done with the evaluation, possible delegation, allocation and operation of gTLDs containing variant characters IDNs ... in order to facilitate the development of workable approaches to the deployment of gTLDs containing variant characters IDNs."

Based on IDNA2008, variant labels should be identified and managed to help minimize the end-user confusability introduced by IDNs. Some of these variant labels could even be activated to promote accessibility of the IDNs, as different language communities using a script may use different variant labels. Achieving these security and usability goals in a stable manner is the key challenge to be addressed.

## Section III: Relevant Resources

Documents in the current public comment for community feedback:

1. [IDN Variant TLD Implementation – Executive Summary](#)
2. [IDN Variant TLD Implementation – Motivation, Premises and Framework](#)
3. [IDN Variant TLD Implementation – Recommendations and Analysis](#)
4. [IDN Variant TLD Implementation – Rationale for RZ-LGR](#)
5. [IDN Variant TLD Implementation – Risks and their Mitigation](#)
6. [IDN Variant TLD Implementation – Appendices \(A: Definitions, B: Use of ROID, C: Limiting Allocated Variant TLDs\)](#)

## Section IV: Additional Information

Background materials:

- [ICANN Board Resolution on Variant Management, 2010](#)
- [ICANN Board Resolution on Root Zone LGR Procedure, 2013](#)
- [Integrated Issues Report on IDN Variant TLDs, 2012](#)
- [Examining User Experience Implications of Active IDN Variant TLDs, 2013](#)
- [Root Zone LGR Procedure, 2013](#)
- [SSAC Comment on Examining the User Experience Implications of Active Variant TLDs Report](#)
- [Root Zone LGR, LGR proposals submitted, status of all script based panels](#)

## Section V: Reports

### FINAL VERSION SUBMITTED (IF RATIFIED)

The final version to be submitted, if the draft is ratified, will be placed here by upon completion of the vote.



AL-ALAC-ST-0918-02-01-EN.pdf

## FINAL DRAFT VERSION TO BE VOTED UPON BY THE ALAC

*The final draft version to be voted upon by the ALAC will be placed here before the vote is to begin.*

The ALAC thanks ICANN Organization for the opportunity to comment on the very important topic of managing IDN Variant TLDs.

### General Comments

IDNs in general, and IDN Top Level gTLDs and ccTLDs specifically, form an important consideration for Internet end users in several regions of the world, in particular East Asia, South Asia, Europe and the Middle East. Further, the Internet end-users who will benefit most are those unable to use the English language and the Roman script, many of whom are first-generation Internet end users. Considering that a significant chunk of the next billion end-users of the Internet may be speakers of lesser known languages and scripts, IDN variant domain names would provide an enhanced user experience, thus enhancing their trust in the Internet.

The primary issue in the context of IDN Variants at the Top Level arises from the fact that the DNS--as well other Internet systems such as browsers and email--work with a literal interpretation of an IDN label, whereas user communities use a fuzzy interpretation where multiple labels are considered equivalent. If such an equivalence does not work, Internet end users may end up confused.

Thus, a particular language community may consider t1 and t1v1 as equivalent in their script, but the DNS system does not recognize such an equivalence (unless specifically delegated as separate labels), and nor do browsers (therefore, <https://s1.t1> and <https://s1.t1v1> are different URLs with different session management) or email systems (therefore, name@s1.t1 and name@s1.t1v1 are distinct email IDs).

Improper handling of such equivalence of Variant TLDs may cause significant security issues, including phishing or other malicious attacks. Further, variants bring in additional manageability issues arising out the (possibly) large number of variants and the diversity options for managing them.

In summary, the main challenge while integrating IDN variant top level domains is to balance the positive user experience provided by variant TLDs on the one hand, with ensuring the security, stability and manageability of the domain name system, and the reduction of user confusion on the other.

### Background

The current round of public comment on the topic originated from a 2010 ICANN Board decision that "no Variants of gTLDs will be delegated (...) until appropriate Variant management solutions are developed". Subsequent work by the ICANN community identified two distinct issues: (a) There was no accepted definition for Variant TLDs; and (b) There was no "Variant management" mechanism for TLDs.

Solutions have been proposed for these two issues. Root Zone Label Generation Rules (LGRs), developed by the community and adopted for implementation by the ICANN Board in April 2013, addresses the issue of a formal definition of Variant TLDs, while a comprehensive set of recommendations have evolved to address the question of managing IDN Variant TLDs. Based on community inputs to these solutions (represented as a set of documents provided), the ICANN Board is likely to reconsider its decision on Variant TLDs.

### Specific Comments

The community has been asked to provide comments to four specific questions, which are treated separately below.

Question	ALAC Advice
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<p><u>1. The rationale for the RZ-LGR requires strictly adhering to the IDN variant label sets defined by the community through the RZ-LGR. Is this a reasonable pre-requisite for implementing IDN Variant TLDs?</u></p>	<p>The ALAC considers that the Root Zone LGRs which were adopted in 2013, and derived through a community process, are the most appropriate way of arriving at IDN Variant Labels, and that strict adherence to this process is reasonable. [Question: Will abandoning the legacy IDN technology cause any issues?]</p>
<p><u>2. Do the proposed recommendations appropriately address the management and implementation of the IDN Variant TLDs? Do any suggested recommendations need to be changed? Why? Are any additional recommendations needed?</u></p>	<p>There are ten recommendations (3 core recommendations, 5 recommendations to minimize user confusion and enhance security and stability, and 2 additional recommendations for operationalization) that have been made. Specific comments on these are as follows:</p> <p><b>A. Core Recommendations</b></p> <p><i>R1. Root Zone Label Generation Rules (RZ-LGR) the only source for valid TLDs and their Variant Labels.</i></p> <p>Agree (already covered in Q.1)</p> <p><i>R2 IDN Variant TLDs {t1, t1v1,...} must be allocated to the same entity or withheld.</i></p> <p>Agree, as this restricts potential abuse of Variants.</p> <p><i>R3. Same second level labels under IDN variant TLDs s1. { t1, t1v1,...} registered to the same entity or withheld (ie., s1.t1 and s1.t1v1)</i></p> <p>Agree, for the same reason as #2 above.</p> <p><b>B. Recommendations to Minimize End-user Confusion and Enhance the Security and Stability of the Internet</b></p> <p><i>R4. Second-level Variant labels under IDN variant TLDs {s1, s1v1,...} on a variant TLD set {t1, t1v1,...} (ie., s1.t1, s1v1.t1, s1.t1v1, s1v1.t1v1) must be registered to the same entity.</i></p> <p>Agree, for the same reason as #2 above, and also because a combination of IDN Variants at Top and Second Levels simultaneously generates many combinations that would otherwise be difficult to manage.</p> <p><i>R5. Second Level IDN tables offered under IDN Variant TLDs harmonized.</i></p> <p>Agree, as it will enable integration of legacy labels with the current policy.</p> <p><i>R6. Second Level Variant label allocatable or activated under IDN Variant TLDs need not necessarily be the same.</i></p> <p>As a fictitious example, if {québec, quebec} are Variant TLDs and {léry, lery} are Variant Second Level labels, this recommendation appears to say that léry.québec and lery.quebec can be activated whereas lery.québec and léry.quebec are left inactive by choice. While this fine by itself, the question if email IDs such as jpierre@lery.québec would cause user confusion is relevant, at it would bounce (whereas jpierre@léry.québec would not).</p> <p><i>R7. Same registry service provider to be employed for IDN Variant TLDs.</i></p> <p>Agree. This would be desirable for consistent handling of Variant labels.</p> <p><i>R8. Same nameservers to be used for IDN Variant TLDs, unless otherwise justified.</i></p> <p>Agree as a desirable situation.</p> <p><b>C. Additional Recommendations:</b></p> <p><i>R9. Update/adjust existing policies and associated procedures to accommodate the recommendations for IDN Variant TLDs.</i></p> <p>Agree. This is essential for several strategic and operational reasons, including UAI.</p> <p><i>R10. All other existing TLD policies and procedures apply to IDN Variant TLDs, unless otherwise identified.</i></p> <p>It may be desirable to consider if IDN Variant TLDs require special treatment or promotion, particularly those from developing economies.</p>
<p><u>3. Does the analysis suitably cover the impact of the recommendations on existing procedures for IDN ccTLDs and IDN gTLDs? Is there alternate analysis for certain cases? Are there any additional impacts on the procedures not identified?</u></p>	<p>Considering the gamut of recommendations by different parts of the ICANN community on IDNs in general and IDN variants at the top level in particular—including the concerns expressed by RSSAC--there appears to be adequate analysis on the impact on existing procedures for IDN ccTLDs and gTLDs.</p>

<p><u>4. Which (if any) of the recommendations require policy consideration by GNSO and ccNSO, whereas the remaining would only have an impact on procedures?</u></p>	<p>The following recommendations may have policy implications that require consideration from GNSO and ccNSO:</p> <p>R2. Variants allocated to same entity or withheld (GNSO, CCNSO)</p> <p>R3. Second-level labels allocated to same entity (GNSO)</p> <p>R4, R5, R6, R7, R8 (GNSO and ccNSO)</p> <p>R9, R10 (GNSO and ccNSO)</p>
<p><u>5. To prevent the permutation issue which can be introduced by using variant labels, as identified by SSAC, how may the allocated IDN Variant TLD labels be limited? Are the mechanisms suggested in Appendix C appropriate? What other factors may also be relevant?</u></p>	<p>The current LGR procedure maximizes Variant labels of the "Blocked" disposition (by blocking the whole label if one or more code points in it are of the "Blocked" disposition), and thereby minimizes the number of allocatable labels. However, it is insufficient to limit the numbers of Variant labels to a minimum set in many scripts.</p> <p>The ALAC suggests a further reduction in the allocatable labels may be required for some scripts (i.e., Arabic) in order to manage the numerosity of labels. Additional work may be required to identify contextual redundancies within a script in order to restrict Variants (for example, based on regional variations, community preferences, meaningfulness, LGR/IDN rule compliance, contemporary vs historic use, or usability/keyboard input constraints) in order to limit numerosity.</p> <p>Similar efforts are also required for managing the numerosity of Variant IDN labels at the Second Level.</p> <p>For a domain name (which combines variants at the Top and Second Levels), there may still be a "combinatorial explosion" after limiting the Top and Second Level Variants individually. Automatic Variant activation may exacerbate the situation, whereas a fee-based management regime (assuming that the fees are not prohibitively high) would help to contain the numerosity. It is therefore recommended that automatic variant activation is avoided.</p>
<p><u>6. Are the risks and their mitigation measures sufficiently comprehensive? Are there any additional risks? Should there be different or additional mitigation measures?</u></p>	<p>While the recommendations are well researched and analyzed, one of the aspects that needs further attention is to do with certain procedures that are left to the discretion of Registry Operators. For instance, when there are a large number of valid variants arising out of variant top and second level labels, ROs are encouraged to put in further restrictions to limit the number of variants. Since such procedures are optional, there is no incentive for ROs to operationalize them.</p> <p>Another set of issues may arise out of transitional exception handling as these guidelines come into effect. Transitional exceptions are those that are temporarily allowed, but are eventually expected to be discontinued.</p> <p>ALAC recommends that to minimize further risks of such kind, that ICANN Org takes the initiative to bring together language communities, ROs and related practitioners to share experiences and learnings on a periodic or ongoing basis, noting particularly that many language communities may prefer to operate in their own silos.</p>

## DRAFT SUBMITTED FOR DISCUSSION

*The first draft submitted will be placed here before the call for comments begins. The Draft should be preceded by the name of the person submitting the draft and the date/time. If, during the discussion, the draft is revised, the older version(S) should be left in place and the new version along with a header line identifying the drafter and date/time should be placed above the older version(s), separated by a Horizontal Rule (available + Insert More Content control).*

### Initial Draft for Discussion

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