IDN Variant TLD Implementation

Status, Recommendations and Next Steps

GNSO Council

18 April 2019
Objectives of This Session

What:
1. Understand
   1. IDN variant top-level domains (TLDs)
   2. Status of IDN variant TLDs
   3. Next steps for GNSO

Why:
- IDN variant TLDs are needed by the community
- Requires consistent policy for implementation
The BIG Picture for IDNs: Usability with Security and Stability

IDNA2008 expects registries at all levels will reduce opportunities for confusion by restricting characters or using variant techniques
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The BIG Picture for IDNs: Usability with Security and Stability

IDN Guidelines

IDN Second Level Domain

IDN Top Level Domain

IDN Variant TLD Recommendations

Registry Operator

Community

IDNA2008 expects registries at all levels will reduce opportunities for confusion by restricting characters or using variant techniques.
Understanding IDN Variant TLDs

- **Security**
  - .epic
    - 0065 0070 0069 0063

- **Usability**
  - .epic
    - 0435 0440 0456 0441

- .澳門
  - 6FB3 95E8
- .澳門
  - 6FB3 9580
- .السعودية
  - 0627 0644 0633 0639 0648 062F 064A 0629
- .السعودية
  - 0627 0644 0633 0639 0648 062F 06CC 06C3
## Which Scripts have Variant Code Points?

<table>
<thead>
<tr>
<th>Script</th>
<th>Variant Code Points</th>
<th>No Variant Code Points</th>
<th>Work in Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
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<td>Armenian</td>
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<td>Bengali</td>
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<td>Cyrillic</td>
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<td>Devanagari</td>
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<td>Ethiopic</td>
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<td>Gujarati</td>
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<td>Latin</td>
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<td>Myanmar</td>
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<td>Oriya</td>
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<td>Sinhala</td>
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<td>Tamil</td>
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<td>Telugu</td>
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<td>Thaana</td>
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<td>Tibetan</td>
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<td>Thai</td>
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Status of IDN Variant TLDs – Background

- Variant labels are hard - interpretation of “same” varies across script
- On 25 September 2010, the ICANN Board resolved:
  - “No variants of gTLDs will be delegated through the New gTLD Program until appropriate variant management solutions are developed.”
- Undertook studies on Arabic, Chinese, Cyrillic, Devanagari, Greek, and Latin scripts in 2011 to understand the variant phenomenon
- Issues collated in the Integrated Issues Report, IIR (2012) - identified following gaps:
  1. No definition of IDN variant TLDs
  2. No IDN variant TLD management mechanism
Status of IDN Variant TLDs – Definition of Variants

- **Gap 1: No definition of variants**
  - **Solution:** Define using Root Zone Language Generation Rules (RZ-LGR) Procedure – based on community input
    - On 11 April 2013, the ICANN Board [resolved](#) to implement the Procedure
    - [RZ-LGR-2](#) in August 2017 with Arabic, Ethiopic, Georgian, Khmer, Lao and Thai scripts
    - 19 of 28 [proposals](#) published; other script panels working to develop RZ-LGR proposals
Gap 2: No IDN variant TLD management mechanism

Solution: ICANN org developed a set of recommendations

- Starting premises of the recommendations based on
  - IDNA 2008, Integrated Issues Report, SAC 60
- Existing processes analyzed
  - New gTLDs Applicant Guidebook and IDN ccTLD Fast Track Process
- A conservative solution proposed
  - Implemented for the first time, so conservatism to manage risks; allows to accommodate experience over time
Development of Recommendations under BIWG Guidance

- gNSO requested BVWG to commence work – with release on RZ-LGR-1
- ICANN org presented initial position paper
- ICANN org presented findings on technical impl.
- ICANN org presented analysis of gTLD/ccTLD processes with initial recommendations
- ICANN org presented initial analysis of risks and over production of variant labels
- ICANN org presented report to address gaps identified by risk analysis
- ICANN org presented detailed analysis and risk mitigation analysis
- BIWG held detailed workshop on impl. solution
- ICANN org presented detailed risk analysis, rationale for RZ-LGR and use of ROID
- ICANN org presented impl. plan and req. to adhere to variant sets by RZ-LGR
- ICANN org presented recommendations to ICANN Board

- Recommendations released for [public comment](#) in 25 July 2018
Six documents published on 5 February 2019:

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)

Recommendations approved by ICANN Board on 14 March 2019

Requested GNSO and ccNSO to take these into account in policy development, in a consistent manner
Next Steps for GNSO Following the ICANN Board Resolution

- Consider the recommendations and associated analysis for policy and procedures for IDN Variant TLDs
  - Nine recommendations
  - Analysis and impact
    - Application
    - Delegation
    - Operations
  - Associated materials
    - Rationale for RZ-LGR
    - Risks and mitigation
    - How to determine same registrant?
    - Minimizing variants for delegation
- Coordinate with ccNSO for a consistent solution for TLDs
Thank You
Appendix: Recommendations for IDN Variant TLD Implementation
## Recommendations for IDN Variant TLDs

<table>
<thead>
<tr>
<th>Administrative</th>
<th>Policy</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Root Zone</strong></td>
<td><strong>Rec.2</strong> Variant TLDs allocated to same entity: {t1, t1v1, …}</td>
<td><strong>Rec.1</strong> Root Zone Label Generation Rules (RZ-LGR) the only source for valid TLDs and their variant labels</td>
</tr>
<tr>
<td><strong>Rec.7</strong> Variant TLDs operated by same registry service providers</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td><strong>Second Level</strong></td>
<td><strong>Rec.3</strong> Same label under variant TLDs registered to the same entity: s1.t1 and s1.t1v1</td>
<td><strong>Rec.5</strong> Variant labels allocatable or activated under variant TLDs not necessarily same</td>
</tr>
<tr>
<td><strong>Rec.4</strong> Second-level variant labels under variant TLDs registered to the</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>same entity: s1.t1, s1v1.t1, s1.t1v1 and s1v1.t1v1</td>
<td><strong>Rec.6</strong> Second-level IDN tables under variant TLDs harmonized</td>
<td></td>
</tr>
<tr>
<td><strong>Subordinate Zones</strong></td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Additional at Root Zone and Second Level:**

**Rec.8** Existing policies and procedures updated to accommodate these recommendations

**Rec.9** All other existing top-level and second-level policies apply, unless identified otherwise
1. Root Zone Label Generation Rules (RZ-LGR) the only source for valid TLDs and their variant labels

- **Existing TLD:** t1
- **Applied-for TLD:** t1

**RZ-LGR**

**SECURE AND STABLE RESULTS:**

- **VALID TLD LABEL**
  - ALL VARIANTS: \{ t1v1, t1v2, t1v3, t1v4 \}
  - ALLOCATABLE
  - BLOCKED

**INVALID TLD LABEL**
2. Variant TLDs allocated to same entity: \{t_1, t_1v_1, \ldots\}

\( t = \text{top-level domain label} \)

\( v = \text{variant label} \)
3. Variant TLDs operated by same registry service providers

\[ t = \text{top-level domain label} \]
\[ v = \text{variant label} \]
4. Same second-level label under variant TLDs registered to the same entity: \( s_1.t_1 \) and \( s_1.t_1v_1 \)

\( t = \text{top-level domain label} \)
\( s = \text{second-level domain label} \)
\( v = \text{variant label} \)
5. Second-level variant labels under variant TLDs registered to the same entity: \textit{s1.t1}, \textit{s1v1.t1}, \textit{s1.t1v1} and \textit{s1v1.t1v1}

\textit{t} = \textit{top-level domain label}  
\textit{s} = \textit{second-level domain label}  
\textit{v} = \textit{variant label}
Recommendations for IDN Variant TLD Implementation

6. Second-level variant labels allocatable or activated under variant TLDs not necessarily exactly the same

\[ t = \text{top-level domain label} \]
\[ s = \text{second-level domain label} \]
\[ v = \text{variant label} \]
7. Second-level IDN tables under variant TLDs harmonized. If \{s_1, s_1v_1, \ldots\} are variant labels under \( t_1 \), then they can never be non-variant labels under \( t_1v_1 \).

\[ t = \text{top-level domain label} \]
\[ s = \text{second-level domain label} \]
\[ v = \text{variant label} \]
8. Existing policies and procedures updated to accommodate these recommendations

9. All other existing top-level and second-level policies apply, unless identified otherwise