Internationalized Domain Names: Overview & Update

Baher Esmat
Manager, Regional Relations
Middle East

Internet & Technology ‘08
Prague, 20 May 2008
Introduction to IDNs

• IDN stands for Internationalized Domain Name
• Domain labels that contain characters other than: Letters “a” to “z”, Digits “0” to “9”, and the Hyphen “-”
• IDNA protocol developed by IETF in 2002-2003: RFCs 3454, 3490, 3491, 3492
• IDNs have existed as SLD since 2003
  – Example: العربية.tld
• Work is underway for introducing IDNs at the top level
  – Example: 例子.测试
Why IDNs?

• There is demand by community
  – Help people access the Internet using their native languages
  – Promote cultural diversity and help preserve languages

• In promoting “Internet Multilingualism” IDN is not the only component
How does it work?

1. User types in www.باه.eg
2. باه.eg gets converted to Unicode
3. Punycode conversion → xn--mgbb2a6f.eg

*.eg ccTLD does not provide IDNs at second level and using it in this slide is only for illustration purposes.
IDNs from user perspective

- Registrants can register names in their local languages
- Registries handle all encodings needed during registration process
  - Example: باهر.د.ج → xn--mgbb2a6f.د.ج
  - Encodings tools:
    - http://josefsson.org/idn.php
- End users will be able write URLs and email addresses fully in IDNs (IETF is working on a standard for internationalized email)
- Some applications display the A-Label instead of the U-Label
  - xn--mgbb2a6f.د.ج instead of باهر.د.ج
IDNA protocol revision

- Effort led by the IETF
- The basic framework of the revision was published in RFC4690 in Sep 06
  - Raises issues like same script/multiple languages, same language/multiple scripts, bi-directional issues, similar-looking characters, combining characters, migration to new versions of Unicode, etc.
- The revised protocol will:
  - Use an inclusion-based mechanism
    - Three categories by procedure not table
      - Protocol-valid (some w/ contextual rules)
      - Disallowed
        - Unassigned
  - Be Unicode version independent
  - Fix bi-directional issues
Status of IDNA revision

• A number of Internet drafts published
  – draft-klenstin-idnabis-issues-07.txt
    • overall rationale and explanation
  – draft-klenstin-idnabis-protocol-04.txt
    • registration vs. resolution
  – draft-faltstrom-idnabis-tables-05.txt
    • category operations procedure
    • not table, but holds Unicode-5.0 result for reference
  – draft-alvestrand-idna-bidi-04.txt
    • to allow combining marks at end of string, by test
IDN technical tests - Laboratory

• Laboratory test was successfully conducted by Autonomica and results were published in Mar 07: http://www.icann.org/announcements/announcement-4-07mar07.htm
• The laboratory environment was a close replica of the root server environment
• Localized labels for testing IDNs (.hippo18potamus): http://www.icann.org/topics/idn/idn-test-labels.pdf
  – Normal Unicode-Punycode conversion
    • فرس18النهر → xn--18-dtd1bd0h3ask
  – Performance with a 63-character long TLD string
    • .hippo18potamushippo18potamushippo18potamushippo18po
  – Right to left script
  – Left to right script with sophisticated shaping properties
  – Non-alphabetic script
IDN technical tests - Live

- 11 evaluative top-level domains were inserted in the root in Oct 07
- They represent the term “test” translated into: Arabic, Persian, Chinese (simplified and traditional), Russian, Hindi, Greek, Korean, Yiddish, Japanese, and Tamil
- 11 SLDs were introduced representing the term “example” with the same 11 languages/scripts
- The final version of the Evaluation Plan is available at: http://www.icann.org/topics/idn/idn-evaluation-plan-v2-9-2-14aug07.pdf
<table>
<thead>
<tr>
<th>Script</th>
<th>Language</th>
<th>SLD.TLD U-labels</th>
<th>SLD A-label</th>
<th>TLD A-label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>Arabic</td>
<td>مثال.اختبار</td>
<td>xn--mgbh0fb</td>
<td>xn--kgbechtv</td>
</tr>
<tr>
<td>Arabic</td>
<td>Persian</td>
<td>مثال.آرامشی</td>
<td>xn--mgbh0fb</td>
<td>xn--hgbk6aj7f53bba</td>
</tr>
<tr>
<td>Chinese, simplified</td>
<td>Chinese</td>
<td>例子.测试</td>
<td>xn--fsqu00a</td>
<td>xn--0zwm56d</td>
</tr>
<tr>
<td>Chinese, traditional</td>
<td>Chinese</td>
<td>例子.测试</td>
<td>xn--fsqu00a</td>
<td>xn--g6w251d</td>
</tr>
<tr>
<td>Cyrillic</td>
<td>Russian</td>
<td>пример.испытание</td>
<td>xn--e1afmkfd</td>
<td>xn--80akhbyknj4f</td>
</tr>
<tr>
<td>Devanagari</td>
<td>Hindi</td>
<td>उदाहरण.परीक्षा</td>
<td>xn--p1b6ci4b4b3a</td>
<td>xn--11b5bs3a9aj6g</td>
</tr>
<tr>
<td>Greek</td>
<td>Greek</td>
<td>παράδειγμα.δοκιμή</td>
<td>xn--hxajbheg2az3al</td>
<td>xn--jxalpdlp</td>
</tr>
<tr>
<td>Hangul</td>
<td>Korean</td>
<td>실례.테스트</td>
<td>xn--9n2bp8q</td>
<td>xn--9t4b11yi5a</td>
</tr>
<tr>
<td>Hebrew</td>
<td>Yiddish</td>
<td>ביבשתלי.spender</td>
<td>xn--fadb5d8ap9b8a8d</td>
<td>xn--deba0ad</td>
</tr>
<tr>
<td>Kanji Hirigana, and Katakana</td>
<td>Japanese</td>
<td>例外.テスト</td>
<td>xn--r8jz45g</td>
<td>xn--zckzah</td>
</tr>
<tr>
<td>Tamil</td>
<td>Tamil</td>
<td>தமிழ் எளியான தமிழ் எச்சேர்</td>
<td>xn--zkc6cc5bi7f6e</td>
<td>xn--hlcj6ayaye9esc7a</td>
</tr>
</tbody>
</table>
IDN .test wiki

- Purpose of the IDNwiki:
  - Introduce users to IDN TLDs
  - Evaluate usability of IDN TLDs in applications
  - Gather information about user problems

- Adding new “features”
  - New languages:
    - Amharic (4th level under idn.icann.org)
    - Hebrew (2nd level under existing TLD)
    - Thai (will be added at 4th level)
    - Urdu (will be added at 2nd level)
  - Process available for others languages
  - DNSSEC signing the zones
  - IPv6 support
  - Exploring IDN email addition

- Having a language / script represented in the IDNwiki is not a pre-requisite for eventually having an IDN TLD with the same language / script in the root

- Wiki can be accessed at: http://idn.icann.org
IANA management of IDN TLDs

• Process for insertion of test IDN TLDs the in root
  – Developed with RSSAC and SSAC recommendations
  – Includes emergency removal procedure
  – Need review, revision, and implementation
  – Initial review is expected to take place later this year
IDN policy process

- ICANN staff does not develop or decide on policy
  Work has been undertaken by various working groups of GAC, GNSO, and ccNSO
- GNSO IDN Working Group explored policy issues in relation to IDN gTLDs and summarized its outcomes in a report: 
  http://gnso.icann.org/drafts/idn-wg-fr-22mar07.htm
- GNSO developed policy for new gTLDs which included IDN gTLDs: 
- ccNSO and GAC formed a joint working group to address IDN ccTLDs and summarized its outcomes in a report:
  http://www.icann.org/topics/idn/ccnso-gac-issues-report-on-idn-09jul07.pdf
- ICANN Board also requested ICANN community to explore both an interim and an overall approach to IDN ccTLDs
## IDN policy process

<table>
<thead>
<tr>
<th>County Code Top Level Domains</th>
<th>County Code Top Level Domains</th>
<th>Generic Top Level Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fast Track</strong></td>
<td><strong>Long Term</strong></td>
<td><strong>New gTLDs</strong></td>
</tr>
<tr>
<td>• Deploy limited number of non-contentious IDN ccTLDs within short timeframe</td>
<td>• Full policy that caters for all</td>
<td>• New ongoing policy for new gTLDs</td>
</tr>
<tr>
<td>• Where demand / readiness exists</td>
<td>• Follows the full ccNSO Policy Development Process</td>
<td>• Includes internationalized domains</td>
</tr>
<tr>
<td>• Don’t wait for full ccNSO PDP</td>
<td>• Issues paper scheduled for publication by ICANN Paris meeting (Jun08)</td>
<td>• Focus on non-ASCII squatting &amp; confusingly similarity issues</td>
</tr>
</tbody>
</table>
Fast Track – IDNC WG

• Fast Track = quick feasible method for introducing IDN ccTLDs
• Purpose of IDNC WG is to develop and report on feasible methods, if any, for introduction of a limited number of non-contentious IDN ccTLDs and not preempt on IDN policy development process
• IDNC WG should take into account and be guided by:
  – The overarching requirement to preserve the security and stability of the DNS
  – Compliance with the IDNA protocols
  – Input and advice from the technical community in respect to the implementation of IDNs
  – Current practices for the delegation of ccTLDs
Draft interim report

• The report addresses:
  – A mechanism for the selection of the IDN ccTLD string
  – A mechanism to designate an IDN ccTLD manager
• Posted for public comments till 25 April 2008: [http://www.icann.org/announcements/announcement-04apr08.htm](http://www.icann.org/announcements/announcement-04apr08.htm)
• Discussed during the ICANN regional meeting in Dubai on 1-3 April 2008: [http://public.icann.org/dubaiagenda](http://public.icann.org/dubaiagenda)
Fast Track schedule

• Publish draft interim report and public consultation (31 March 2008)
• Publish final report (13 June 2008)
• Discuss final report (23 June 2008)
• GAC and ccNSO support final report (24-25 June 2008)
• Submit final report to ICANN Board (26 June 2008)
More work is underway

• ICANN IDN Guidelines
  – Need revision to follow IDNA revision
  – Developed by ccTLD and gTLD registry operators

• Local community efforts, such as
  – language experts participate in IDNA review
    • Review of PVALID characters
  – In addition to protocol, a need for:
    • local registration policies and variant tables
  – Example: Arabic Script IDN Working Group (ASIWG)
    • Develop a framework for implementation of IDNs in Arabic Script
Thank You

http://icann.org/topics/idn