IDNA Protocol Revision

Workshop

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26 June 2008

Workshop Agenda

- **Introductions:**
  - General intro/Rationale (Tina)
  - Revision Details (Cary)
- **The two major revision topics:**
  - Character list generation rules (Patrik)
  - R-t-L/Bidi (Harald)
- **Implementation:**
  - Registration including non-protocol responsibilities (Cary)
  - Resolution (Patrik)
  - Example of script coordination: ASIWG (Ram)
- **Conclusion:**
  - Timing scenarios (Cary)
  - Summary and questions (Tina)

Characters in the DNS

- The DNS can handle all US-ASCII characters
  - Examples:

a,b,c…,z 0,…,9 -	(!) EXCLAMATION MARK
(') APOSTROPHE	(&) AMPERSAND
(%) PERCENT SIGN	($) DOLLAR SIGN
(#) NUMBER SIGN	(") QUOTATION MARK

- Most TLD registries have implemented the hostname rule
  - Also known as LDH
  - Domain names can only contain:

a,b,c…,z
0,…,9
- (dash)

- That was before internationalization….

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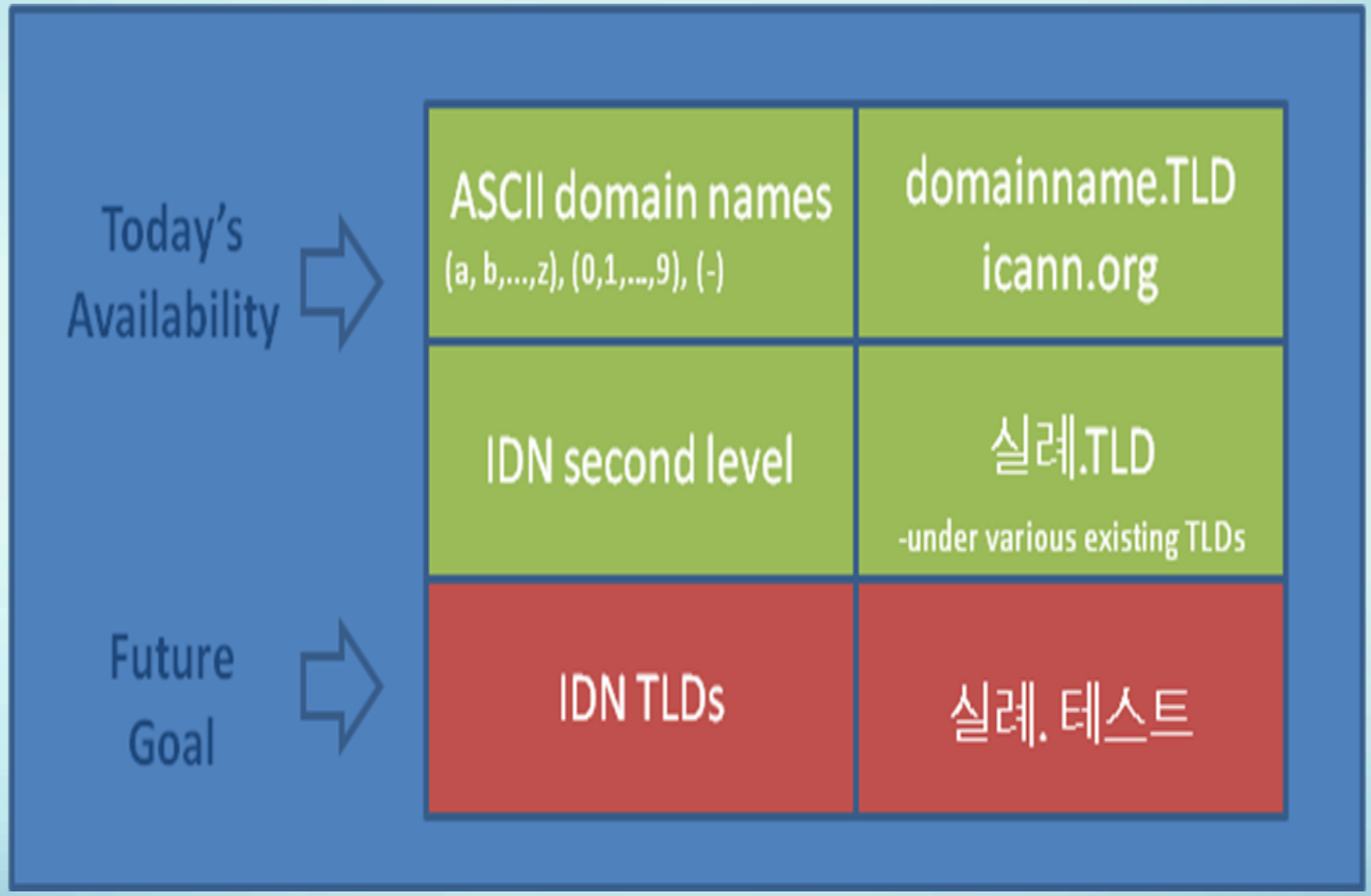
IDN Definitions

- Internationalized domain names are:
  - Names with characters other than the standard ASCII (a,b,…z), (0,1,…9), (-)
- IDNs are about localized solutions
  - But need to be ‘internationalized’ due to the global nature of the Internet
- IDNs have existed as second level since 2003
  - under the protocol standards (IDNA)
  - email protocol standard is underway (IETF)
  - IDN Guidelines was issued in 2003 to support the IDNA protocol

What we have and where we are headed



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IDN Definitions

- **The A-label**
  - is what is transmitted in the DNS protocol and this is the ASCII-compatible (ACE) form of an IDNA string; for example "xn--11b5bs1di".
- **The U-label**
  - is what should be displayed to the user and is the representation of the Internationalized Domain Name (IDN) in Unicode; for example " परीका " ("test" version in Hindi, Devanagari script).
- **The LDH-label**
  - strictly refers to an all-ASCII label that obeys the "hostname" (LDH) conventions and that is not an IDN; for example "icann" in the domain name "icann.org“
- **The IDNA protocol provides the transition back and forth between A-labels and U-labels**

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Displayed Form vs. Stored Form

- Historically the domain name you regi
  ster is also the domain names stored and usable in the DNS
- This is changed with introduction of IDNs
- Usually the stored form usually gives no meaning
  - Example: فرسالنهر.tld → xn--mgbtbg2evaoi.tld
- However, there are exceptions:
  - xn--gibberish - decodes into the Arabic characters ب ب ب ٨٧٩ ب
  - xn--trademark - with different versions of trademarks
  - This is coincidentally and hence not intentionally
- xn-- prefix indicates to application software that the label needs
  t
  o
  be decoded back into Unicode for proper display to the user

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Rationale for the IDNA revision

- Proposed revision at IETF
  - RFC4690 requests the revision and provides suggestions to solutions to some problems

- Reasons and results of the revision:

Current Version	Revised Version
Unicode version 3.2	Unicode version independent
Some/New characters excluded	All characters in Unicode will have a status
Not all words can be represented	Not all words can be represented
Exclusion Based: - Table based	Inclusion Based: - Property and procedure based: - Protocol-valid (w/ context rules) - Disallowed - Unassigned
App developers have difficulty in understanding description of standard	Separates registration and resolution in detailed steps

Rationale for IDNA Protocol Revision

- Other issues was discovered during the revision process
  - For example: bidirectional problems
- Overview of documents, by Patrik Faltstrom:
  - http://stupid.domain.name/idnabis/
    - Overall rationale and explanation
    - Protocol: registration vs. resolution
    - Tables and procedures
    - Bidirectional issues solutions

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