Security Challenges experienced in Japanese IDNs

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Spaces of Japanese IDNs

• IDN.jp
  – Started in 2001
  – Registration policies and rules were developed by experts in various fields
  – The number of registrations has decreased gradually 143->100 K

• IDN.{prefecture-name}.jp
  – Started in 2012
  – Registration policies and rules were basically the same as those for IDN.jp
  – The number of registrations has decreased gradually 3->2 K

• .IDN (gLD)
  – ~10 Japanese IDN gTLDs were delegated in 2012 new gTLD round
  – Almost no usage of those Japanese IDN gTLDs is observed

• .日本 (IDN ccTLD)
  – JPRS was designated as .日本 registry in 2010
  – Service not yet started
    • Because there seems to be no demand from the community until now
Security-related Challenges (1)

• Character repertoire
  – Japanese writing system allows words consisting of arbitrary mixture of Kanji, Hiragana, Katakana, and ASCII
  – Co-existence of
    • Similar-looking characters (e.g., 力(Kanji) and 力(Katakana))
    • New and old versions defined for one character (e.g., 学(new) and 學(old) can both be used; e.g., 国學院大学)
      – E.g., 学 and 學 are valid Japanese characters and sometimes have their own independent status
  – Can many characters be under control in registration and resolution including input to the devices?

Characters in daily life (~7,000) are allowed to be used
  – No big technical issues in accommodating such number of characters
  – JIS (Japanese Industrial Standard) second-level characters (~7,000) are appropriate in daily life, although JIS defines >11,000 characters
Security-related Challenges (2)

• Handling similar-looking or occasionally-exchangeable labels
  – There can exist similar-looking domain labels and occasionally-exchangeable labels
    • E.g., カー (Katakana+Katakana) and カー (Kanji+Kanji)
    • E.g., 國學院大学 and 国学院大学
  – Any character usually has a unique practical status and value even if it has similar-looking characters or occasionally-exchangeable characters
  – Should similar-looking or occasionally-exchangeable characters be treated with special care?

solution

Any string that is expressed by any combinations of characters in the repertoire is allowed to be registered

– カー and カー, 國學院大学 and 国学院大学 can be registered by different registrants

– Bad faith registration/use of similar-looking labels or occasionally-exchangeable labels is resolved by DRP
  • All labels in goodwill use with no confusion is allowed to coexist
Security-related Challenges (3)

• Japanese common nouns are more “common” for Japanese community than ASCII common nouns
  – Registration of a common Japanese noun may have a huge value than registration of an ASCII common noun
  – Monopoly : grasping a value of domain name subspace can happen more easily (by registering a very valuable common noun)
  – Should any countermeasures be needed against possible explosive demand?
    • Premier domains with higher price?
    • No registration is allowed for valuable common nouns?

Valuable Japanese words (~600) are reserved in IDN.jp
– Common nouns in Yellow Pages (e.g., 旅行(travel), 会社(company))
– Prefixes and postfixes of certain organizations (e.g., 小学校 (elementary school))
– Most of them are still reserved
  • Some of them have been released for registration
Reserved Labels in IDN.jp and IDN.tokyo.jp

- Tokyo and the prefectures; large cities designated by ordinance; prefectoral capital cities
- Single characters in Hiragana, Katakana, numbers written in Chinese characters, prolonged sound symbols, and others.
  - あ、イ、五、ー、…
- Names of primary and secondary educational organizations (primary schools, junior high schools, etc.)
  - Names ending with “小学校 (primary school),” “中学校 (junior high school)” and “高等学校 (high school).”
- Names of international inter-governmental organizations (such as the United Nations)
  - Refer to “The List of Reserved Domain Names (International, inter-governmental organizations)”
- Names related to administrative, judicial, and legislative agencies
  - Refer to “The list of Reserved Domain Names (Administrative, judicial, and legislative agencies)”
- Japanese common nouns
  - Refer to “The list of Reserved Domain Names (Japanese common nouns)”
- Names required for JPNIC operations
  - ジェイピーニック、ドメイン名、日本語ドメイン名、…
Security-related Challenges (4)

- Japanese proper nouns are used much more in Japanese daily-life than ASCII proper nouns
  - Should Japanese proper nouns be protected more than ASCII proper nouns?

Copyright holders of trademarks or registered names and full personal names could be registered prior to general FCFS registration in 2001 launch of IDN.jp
Security-related Challenges (5)

• Relationship between ASCII space and IDN space
  – Relationship between something.東京.jp and something.tokyo.jp
    • 東京 and tokyo have exactly the same pronunciation and meaning
    • Many (some?) users may consider both domain names are the aliases of the same entity
    • Many (some?) registrants may think they should register both to protect the other label as well
  – How tight should be the relationship between ASCII space and IDN space when both spaces depicts the same thing

  solution

  – Automatic linkage between something.東京.jp and something.tokyo.jp
    • something.東京.jp is reserved for (and can be registered only by) the registrant of something.tokyo.jp
  – If .日本 is created, something.日本 will be reserved for (and can be registered only by) the registrant of something.jp