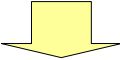

Internationalized Domain Names

- .jp -

Sept. 30, 2002
JPRS (Japan Registry Service Co., Ltd.)
hotta@jprs.co.jp

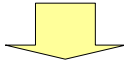
<http://日本レジストリサービス.jp>

non-English characters in e-mail

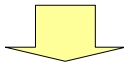
- **Step1**
 - Phonetic mapping in e-mail texts
 - **Step2**
 - Native language characters in e-mail texts
 - **Step3**
 - Native language characters in “Subject” fields
- 
- **Step4 ?**
 - Native language characters in “To” and “From” field
 - Names such as company names and personal names in the social relevant context should be presented in their native language

Demands on Internationalized Domain Names

- **Rapid growth of the Internet**
 - More non-English speakers are becoming Internet users



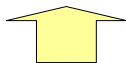
- **People using non-ASCII characters**
- **Undesirable unification in LDH world**
 - 博文, 博史, 宏史,are all “hirofumi”s in ASCII space
 - Apostrophe, accents, umlauts, cannot be used in ASCII space



Demands on Internationalized Domain Names

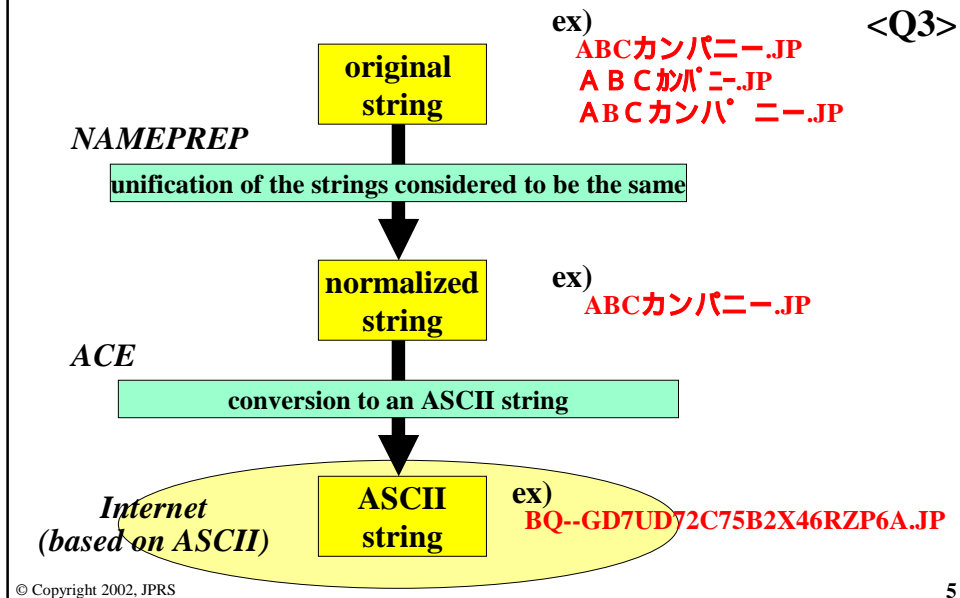
Client-side solution > Server-side solution

- **IETF is moving towards client-side solution**



- **Stability**
 - DNS is a huge distributed database
 - DNS is working on a delicate balance
 - Substantial change of DNS is dangerous
- **Deployment speed**
 - Changing all the servers takes long time
- **Consistency**
 - Partial deployment of server-side solution may lead to separation of the Internet

How non-ASCII string is converted to ASCII

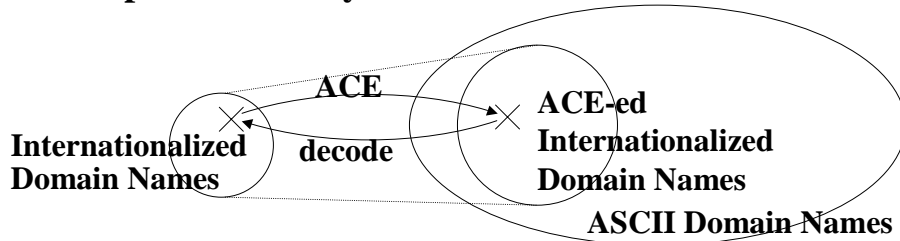


NAMEPREP and ACE

- **NAMEPREP** (Preparation of Internationalized Host Names)
 - non-ASCII string representations which should be regarded as the same string are converted into one representation
 - Case fold
 - Normalize
 - Prohibit
- **ACE** (ASCII Compatible Encoding)
 - non-ASCII representation is converted into an appropriate ASCII domain name
 - Ex) ACE algorithm
 - RACE
 - BQ--3BS6KZZMRKPDBSJQ4EYKIMHTKQG7CY
 - Punycode
 - ZQ--ECKWD4C7CU47R2WFQW7A0ECL32K

Issues in using ACE

- Subspace is used by internationalized domain names



- Issues
 - Reservation of the subspace
 - Length limitation is severer
 - Domain label
 - Domain name

IDN-admin (1)

- characters with different code points are sometimes to be considered the same
 - different characters having the same/similar shapes
 - Greek Α
 - Cyril А
 - English A
 - a character having multiple shapes
 - 国
 - 國

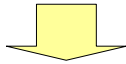
- **define a pair**
 - language
 - **character set to be used in domain names**
 - if multiple characters are considered to be the same
 - one of them is used as a representative of the characters
 - a domain name without non-representative characters is registered as a representative
 - all other domain names are “reserved” as derivatives of the representative domain name
 - **this is for avoiding cybersquatting**
- **informational RFC**
- **from users’ point of view, all the ccTLDs and gTLDs should follow the same definition**

History of JP domain names

- **1989 – Registration in the 3rd-level domain name space**
 - Organizational-type domain names
 - co.jp, ne.jp, ac.jp, . . .
 - Geographical-type domain names
 - tokyo.jp, . . .
 - Restriction of “one domain name per organization”
 - Local presence required
- **Feb. 2001 – General-use JP domain name space**
 - ASCII domain names
 - abc.jp
 - **Japanese domain names**
 - **日本レジストリサービス.jp**
 - No such restriction as “one domain name per organization”
Local presence required

Introduction of General-Use JP Domain Names

- Changes of the Demands on domain names
 - Demands for more than one domain name per organization
 - Demands for simpler, lower-cost registration procedures
 - Requests for registration of short-lived domain names, such as those used in events
 - Demands for Japanese domain names



- Registration as second level domains
 - ASCII label
 - Japanese label

Introduction of Japanese Domain Names

日本レジストリサービス.JP

↑ ↑
Second level domain Top level domain

- Japanese domain names, consisting of Chinese and Kana characters as well as ASCII characters, can be registered
- Japanese domain names are registered only as general-use JP domain names.
- Up to 15 characters

Categories of Reserved Japanese Domain Names

- **Prefectures; large cities designated by ordinance; prefectural capital cities**
- **Single characters in Hiragana, Katakana, numbers written in Chinese characters, prolonged sound symbols, and others.**
 - あ、イ、五、一、...
- **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)**
- **Names related to administrative, judicial, and legislative agencies**
- **Japanese common nouns**
 - Ex) service, station, sightseeing, . . . (that may appear in yellow pages)
- **Names required for JPNIC operations**
 - ジェイビーニック、ドメイン名、日本語ドメイン名、...

Phased introduction

- **Priority registration**
 - 22/Feb/2001 - 23/Mar/2001
 - Trademarks, registered names, university names, personal names in full
 - In case of competition, registrants were determined by draw
- **Concurrent registration**
 - 02/Apr/2001 - 23/Apr/2001
 - All applications which arrived in this period were regarded as arrived at the same time, not in the order received
 - In case of competition, registrants were determined by draw
- **First-come-first-served basis registration**
 - 07/May/2001 -

Results of Priority Registration

- Priority Registration Applications

Category	ASCII	Japanese	Total
Trademarks	8,300	11,900	20,100
Registered names	0	12,400	12,400
Personal names	200	600	800
academic	0	400	400
Total number of applications	8,500	25,400	33,800
Number of domain names registered	6,500	22,600	29,100

Results of Concurrent Registration

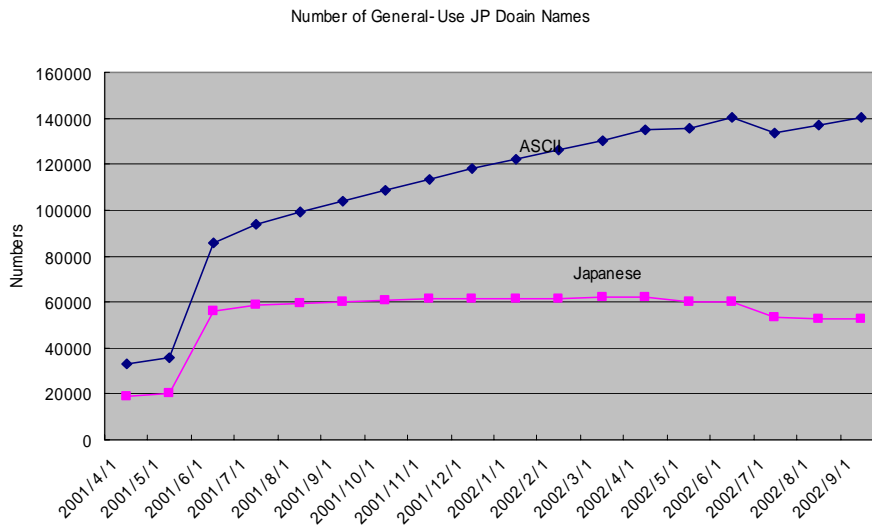
- Concurrent Registration Applications

Category		ASCII	Japanese	Total
Number of applications	Multiple applications	32,500	41,700	74,200
	Single applications	22,600	23,400	46,000
	Total	55,100	65,200	120,300
Number of domain names	Multiple applications	4,600	5,200	9,800
	Single applications	22,600	23,400	46,000
	Total	27,200	28,600	55,800

of domain names as of 1/Sept/2002

Traditional 297,000 ASCII -
 General use 190,000 ASCII 53,000 Japanese

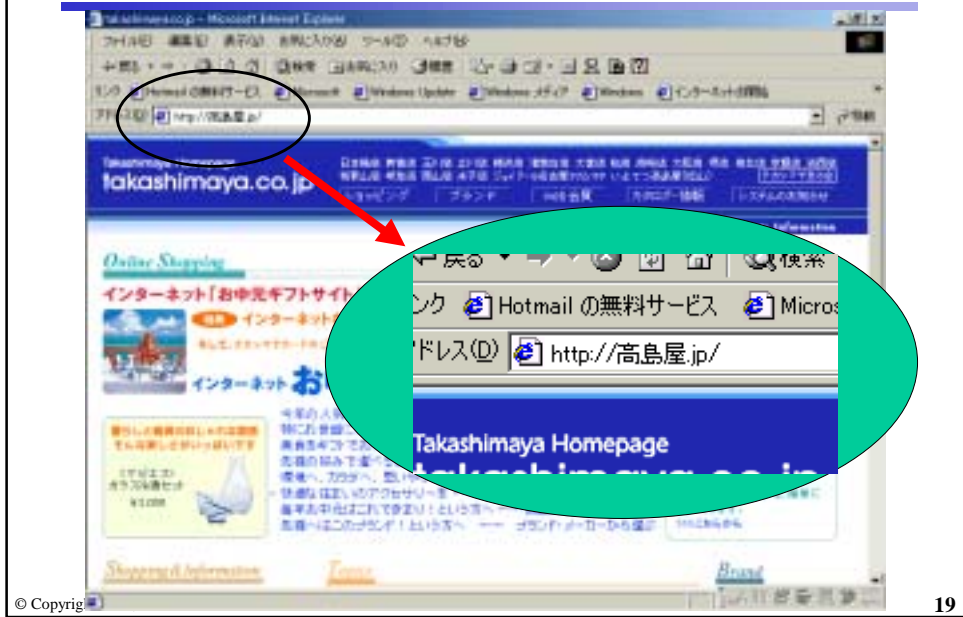
Results of Concurrent Registration



Technologies in Japanese JP domain names

- **NAMEPREP+RACE**
- **mDNkit (open source)**
 - Software library for applications
- **Applications**
 - DNS Proxy
 - mDN wrapper (which intercepts communications and converts domain names)
 - IE + plug-in
 - Users can develop applications using mDNkit

Example



Japanese Domain Names Association

- **Activities** 日本語ドメイン名協会.jp
 - Information exchange
 - Standardization of usage
 - Development of a tool kit
 - Support for development and testing
- **Members**
 - ISPs
 - Application/Hardware vendors
 - Domain name registries/registrars
 - Universities
- **Working Groups**
 - Interface specification
 - Web
 - Mail