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MULTILINGUALIZATION STANDARD

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Multilingualization Standard

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Abstract

- Different technologies and approaches for the multilingualization of the domain names and email addresses were considered by the IETF. The standard is punycode based and finally released and approved by ICANN. The details of the standard will be explained and ideas for implementation in the Arab countries will be discussed .

Outline

- History of internationalized domain names .
- History of the internet.
- Domain Name System and Its limitations.
- How idn works.
- IETF and new standard.
- ICANN .
- Companies working to move to IETF Standard.
- Conclusion .

History of Internationalized Domain Names

1998

- | | |
|----------------|--|
| Apr 1998 | Internet Research Development Unit, National University of Singapore implements iDNS pilot project |
| Jul 1998 | Asia Pacific Networking Group (APNG) sets up Chairman's Commission to create a more robust Domain Name Server – iDNS |
| Aug – Dec 1998 | APNG Chairman visits countries in the Asia Pacific, creating regional awareness and interest in the project |

1999

- | | |
|----------|--|
| Jan 1999 | First Prototype of iDNS developed under the auspicious of APNG. |
| Feb 1999 | Presentation of iDNS at APRICOT'99 (Singapore). Asia-Pacific iDNS Testbed initiated. |
| Jun 1999 | Progress report of Asia-Pacific iDNS Testbed at INET'99 (San Jose) |
| Oct 1999 | Commercialized company doing iDNS. (i-DNS.net) |
| Dec 1999 | iDNS BoF at IETF'46 (Washington) |

2000

Jan 2000	IDN WG formed by IETF.
Mar 2000	IDN WG Meeting at IETF47 (Adelaide) [Requirements for IDN]
Jun 2000	MINC Launch in Korea (Seoul)
Aug 2000	IDN WG Meeting at IETF48 (Pittsburg) [Design Teams Formed]
Nov 2000	Verisign/i-DNS announced ML.com ICANN IDN Workshop (LA)
Dec 2000	IDN WG Meeting at IETF49 (San Diego)

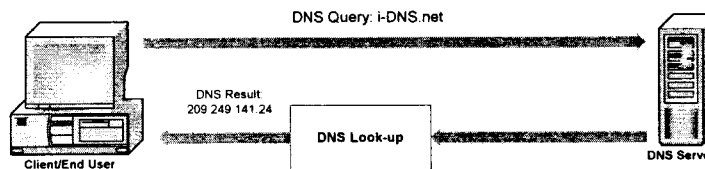
History of the Internet

How It All Began

Year	Milestone
1958	<ul style="list-style-type: none"> • US President Eisenhower requests funds to start ARPA
1972	<ul style="list-style-type: none"> • ARPANET begins its evolution into the Internet following the invention of TCP/IP by American academics/researchers
1984	<ul style="list-style-type: none"> • The concept of using Domain Names System (DNS) as well as the infrastructure for DNS resolution process is introduced • Domain Names become a functional convenience to Internet browsing • Commercialization of the Internet
1986	<ul style="list-style-type: none"> • Internet Engineering Task Force established to oversee the creation of Protocol Specification
1992	<ul style="list-style-type: none"> • Internet Society (ISOC) is set up to provide leadership to IETF and IAB in addressing issues relating to Internet infrastructure standards
1993	<ul style="list-style-type: none"> • InterNIC, a registered service mark of the U.S. Department of Commerce (DoC), is created to provide DN registration services
1998	<ul style="list-style-type: none"> • US DoC releases Green and White Paper outlining its plan to privatize DNS • US DoC enters into an agreement with the Internet Corporation for Assigned Names and Numbers (ICANN), establishing a process for transitioning DNS from US Government Management to Industry.
1999	<ul style="list-style-type: none"> • Explosion of domain names registrations. The fourth millionth domain name is registered in March and the fifth millionth domain name is registered in May.

The Domain Name System

- ❑ **Strings of IP numbers are hard to remember**
- ❑ **Domain names facilitate easy recall for access to websites**



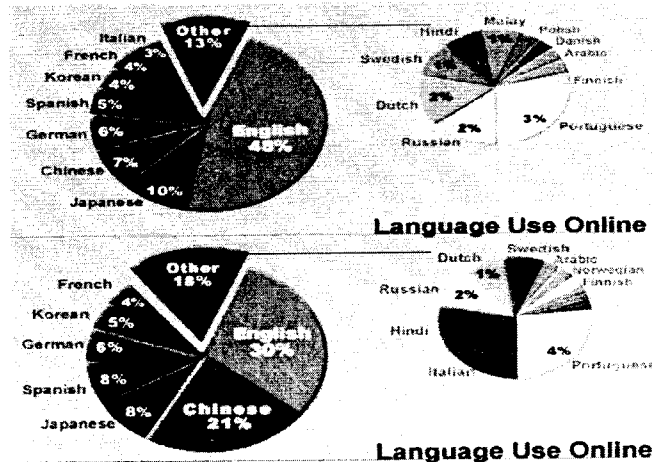
http://www.i-DNS.net = http://209.249.141.24

- ❑ **End user enters www.i-DNS.net**
- ❑ **Server matches that with its corresponding IP address**
- ❑ **End user is brought to the requested website**

What Are Domain Names Used For Nowadays?

- Website & Portal: <http://www.yahoo.com>
- Email Address: bush@whitehouse.gov
- FTP: <ftp.zdnet.com>
- Other TCP/IP protocols such as Telnet, and Gopher etc.
- Commercial Value of Domain Names
 - Essential Digital Branding in the Internet Economy

Emerging Trend towards a Multilingual Internet



Source, Afternic.com, 2000

- Solution Required: Internationalized Domain Names

Limitations of the Existing Domain Name System


Problems with the current DNS


- **Only allows a limited set of 38 alphanumeric characters**
 - **A to Z, 0-9, the hyphen and the dot**
- **Have to be in English even though:**
 - **There are many languages in the world; and**
 - **People from all over the world use the Internet**


Introduction to Internationalized Domain Names

What are Internationalized Domain Names (IDN)?


- IDN refers to Domain Names which contains characters beyond the characters found on a standard *ENGLISH* keyboard, i.e. characters beyond "A-Z", "0-9", "-" and "."

Address  <http://简体中文.雅虎.公司>

<http://مقرانترنتمصر.شبكة> 

<http://ישראל.אוניברסט> 

Address  <http://தமிழ்நாடு.இணையம்>

Address  <http://www.viagenie.qc.ca/>

Location: <http://ヤフー.会社>

Location: <http://삼성.회사>

Location: <http://ทีเอชเน็ต.พาณิชย์.ไทย>

Benefits of IDN

- Gives people the freedom of choice
- Preserves cultural and linguistic integrity
- Empowers non-native English users to come online and tap the power of the Internet.

- Creates new opportunities for enterprises to establish their own identity online.
- Entrenches a company's web identity and web presence
- Creates an affinity with the non-English speaking business market by speaking their language.
- Opens up new business markets

- A more intuitive Internet experience.

How iDNS Works

IETF

- IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.
- It is open to any interested individual.
- Actual technical work is done in Working Group organized by topics in several areas.

IETF

- IETF is divided in Areas
 - Applications Area
 - General Area
 - Internet Area
 - Internationalized Domain Name (idn)
 - Operations and Management Area
 - Routing Area
 - Security Area
 - Transport Area
 - User Services Area

IETF IDN WG

- Mailing List
 - General Discussion: idn@ops.ietf.org
 - To subscribe: idn-request@ops.ietf.org
 - Archive: ftp://ops.ietf.org/pub/lists/idn*
 - Website <http://www.i-d-n.net/>
- Chair
 - James Seng <jseng@pobox.org.sg>
 - Marc Blanchet <Marc.Blanchet@viagenie.qc.ca>

Punycode

- Punycode is a bootstring encoding of Unicode for Internationalized Domain Names in Applications. It uniquely and reversibly transforms a Unicode string into an ASCII string. ASCII characters in the Unicode string are represented literally, and non-ASCII characters are represented by ASCII characters that are allowed in host name labels (letters, digits, and hyphens). Selection of ACE encoding has gone through several stages, RACE, DUDE, AMC-Z and eventually PUNYCODE. PUNYCODE is chosen because it presents the best balance between algorithm complexity and length of the final ACE string.
- The URL for PUNYCODE RFC. (<ftp://ftp.rfc-editor.org/in-notes/rfc3492.txt>)

ICANN

- **Standards for ICANN Authorization of Internationalized Domain Name Registrations in Registries with Agreements**
- <http://www.icann.org/riodejaneiro/idn-topic.htm#5>

ICANN

- At the same time, the premise of this paper is that it would be a mistake for ICANN to pursue a burdensome and/or intrusive approach to IDN implementation – for example, by putting ICANN in the position of approving a character-equivalence table for each language, and of maintaining such tables. The deployment of IDNA within existing top-level domain registries is fundamentally a registry responsibility, and the registries will be in the best position to make appropriate implementation decisions themselves, and should have the freedom to make adjustments as experience dictates. Just as DNS registries embrace a wide diversity in registration policies and administrative procedures, reflecting the diversity of local Internet communities, it seems apparent that the vast diversity of human character sets and the languages from which they come compels a language-by-language, registry-led approach to the development of detailed registration policies and administrative procedures.

ICANN

- Whereas, a three-part protocol suite defining a standard for internationalized domain names in applications was published as RFCs 3490, 3491, and 3492;
-
- It is:
- Resolved [03.47] that the ICANN Board endorses the IDN implementation approach set forth in the draft Guidelines for the Implementation of Internationalized Domain Names, as they may be amended in further consultation with registry operators or evolve in view of new technical standards, for implementation of IDNs;
- Resolved further [03.48] that the President is authorized to implement the Guidelines by authorizing registration of IDNs in registries with agreements with ICANN on the basis of those Guidelines;

Technology Companies

- i-DNS.net amongst the first IDN providers to adopt the new IETF Punycode standard
- **General, i-DNS.net International, 2 May 2003 -- i-DNS.net** will be launching Punycode for multilingual domain names starting on 2nd June 2003. Punycode will be used for all existing and new multilingual domain names.
- The Migration Plan starting in May will prepare all existing multilingual domain names, or IDNs, for Punycode. The Company has also upgraded all of its IDN-related Software to support this new IETF standard.
- **i-DNS.net**, the IDN leader who thru its beginnings at the **National University of Singapore** pioneered the IDN movement in early 1998, is once again proud to be amongst the few if not the first IDN provider to pioneer adoption of this new IETF standard, 3 years in the making.

Conclusion

- The Standard is set and endorsed by ICANN
- Arab countries should move quickly to Arabize the internet to bridge the digital divide and protect the intra-Arab communication.
- Tech ready to be implemented by cctlds with huge potential commercial revenue.