Arabic Domain Names (ADN) Pilot Project

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Outline

- Characteristics of Domain Names
- IDN and ADN
- ADN Pilot Project
- What is Next?
- Important Note
- Conclusion
Characteristics of a Domain Name

- RFC 1035
  - A full qualified domain name has at max 255 characters
  - Consists of labels separated by “.”
  - A label may have up to 63 characters
  - Maximum number of labels: 127
  - Accepted ASCII character set: a-z, 0-9, ’-’
Need for Multilingualism

- Largest percentage of Internet users are now in the Asia-Pacific region
- Consequence of the Internet “globalization”: growing number of users not familiar with ASCII
  - Domain names in ASCII characters poses linguistic barriers
  - Native speakers of Arabic, Chinese, Japanese, Korean, Russian, Tamil, Thai and others who use non-ASCII scripts
- Requirement for internationalization of the Internet Domain Name System
IDN and ADN

- IDN (Internationalized Domain Names)
  - Introduces “international” characters into DNS
  - IETF IDN WG adopt UNICODE 3.2
  - Can be used under ASCII gTLD & ccTLD

- ADN (Arabic Domain Names)
  - It is the IDN implementation for the Arabic language (part of IDN)
  - Focusing on using IDN for implementing Arabic domain names (Fully Arabic)
IDN: Internationalized Domain Name

- IETF IDN WG adopt UNICODE 3.2
  - Arabic, Syriac, Malayalam, Greek, Cyrillic, Armenian, Hebrew, Thaana, Devanagari, Bengali, Gurmukhi, Gujarati, Oriya, Tamil, Thai, ...
  - 95,156 characters

- They Decided that:
  - Every problem can be solved by yet another layer of indirection
  - DNS ASCII encoding of non-DNS ASCII characters
  - A label starting with “xn--” signals encoded string
IDN: Standards

- Proposed by IETF IDN WG (in several RFC’s)
  - 3490 IDNA - Framework for conversion of IDN into Punycode at the application end for DNS resolution
  - 3491 Nameprep - Stringprep Profile for use in IDNs (case mapping, normalization and “sanitization” to reduce ambiguity of names)
  - 3492 Punycode - An ACE (ASCII Compatible Encoding) for use in IDNs
  - 3454 Stringprep - Preparation of Internationalized Strings.

- Implementation methods following these standards are called “Internationalizing domain names in applications (IDNA)”
User inputs IDN

\[ \text{.com.sa} \]

IDN is divided into several levels (labels)

\[ \text{.com | sa} \]

non-ASCII labels are converted to ASCII using punycode

\[ \text{mgb5a8an | com | sa} \]

each converted label is prefixed with “xn--” - called “ASCII-compatible encoding (ACE)”

\[ \text{xn--mgb5a8an | com | sa} \]

Labels are recombined back

\[ \text{xn--mgb5a8an.com.sa} \]

The ASCII-compatible encoding can be used in the DNS zone files, e.g.

\[ \text{xn--mgb5a8an.com.sa IN A 66.225.214.20} \]
A number of solutions and implementations have been introduced by different vendors to our market, but:

- Non-standard solutions
- Unrecognized by the international bodies such as ICANN and IETF
- Incompatible solutions from technical and linguistic point of view
- Multiple registrations for the same category
- Disjoint networks each with its own Arabic domain name space
ADN: Levels of an ADN Solution

- **Linguistic issues ✓**
  - Done by local community
  - Defining the accepted Arabic character set to be used for writing Arabic domain names
  - Joint efforts to produce an RFC from existing Internet drafts

- **Arabic TLDs ✓**
  - Done by local community, ESCWA’s Internet-Draft
  - Defining the top-level domains of the Arabic domain name tree structure (i.e., Arabic ccTLDs, and gTLDs).
  - Joint efforts to produce an RFC from existing Internet drafts

- **Technical solutions ✓**
  - Partially defined and standardized by IETF
    - RFC’s: 3490 IDNA, 3491 Nameprep, 3492 Punycode, 3454 Stringprep

- **Arabic root servers ✗**
  - No root servers yet available for non-ASCII domain names
  - Not recognized by ICANN yet (?)
Initiation: *The GCC Pilot Project*

- During the GCC ccTLDs Group meeting on 7 March 2004, SaudiNIC suggested:
  - “A Technical Proposal for Implementing Arabic Domain names in the GCC Countries”
- The proposal was accepted
- A technical taskforce was formed and assigned the task to implement the proposal within 6 months
o Mission
  • To implement a test bed for Arabic Domain Names in the League of Arab States’ countries, following the GCC Pilot Project
  • This will allow those countries to early experience the use of Arabic domain names, identify the needs, locate possible problems, and develop some tools

o Objectives
  • To gain experience and knowledge of the Arabic Domain names
  • Test the implantations of Arabic Domain names
  • Build local awareness about Arabic Domain names
  • Establish joint work with other entities (ISPs, universities, ...)
  • Possibly develop some tools related to Arabic domain names and DNS
ADN Project: Phases

- **Phase 1: Testing ADNS**
  - Setting up Arabic root servers ✓
  - Resolving Arabic domain names ✓
  - Testing other DNS software and browsers ✓
  - Writing technical documents about the gained experience ✓

- **Phase 2: Developing policies and regulations**
  - Studying the current available polices for domain registration from ICANN & WIPO
  - Defining Arab countries’ special needs
  - Writing policies and regulations for registering Arabic domains

- **Phase 3: Public awareness**
  - Build a website for the project and publish some tools and useful documents in it ✓
  - Encourage other Arab countries and entities to participate in this project
  - Registering some test Arabic Domain names ✓
ADN Project: Progress

- 07-03-2004: GCC Taskforce established
- 14-03-2004: Project plan discussed; different scenarios considered
- 22-03-2004: Implementation plan for Arabic root servers finalized
- 18-04-2004: Project Plan finalized
- 26-04-2004: AE Arabic ccTLD server & AE Arabic root server online
- 11-05-2004: SA Arabic ccTLD server & SA Arabic root server online
- 17-05-2004: QA Arabic ccTLD server online
- 23-05-2004: Different applications for supporting IDN/ADN tested
- 29-05-2004: Test Arabic domains registered
- 30-05-2004: The project website built
- 03-07-2004: IDN/ADN Converting Tool built
- 25-07-2004: DNS checker for Arabic Domains built
- 18-08-2004: Project technical documents set up
- 22-09-2004: Zone file editor for Arabic domains built
- 01-02-2005: Project moved under the League of Arab States (ADNS Working Group)
- 20-04-2005: OM Arabic ccTLD server online
- 10-11-2005: SY Arabic ccTLD server online
Two committees established

- **Steering Committee:**
  - Oversees the operation of the whole project
  - Approves the membership of new participants
  - Manages/administers the Arabic root server (hidden if needed)
  - Assembling Technical Committee

- **Technical Committee (Taskforce):**
  - Provide technical coordination between project participants
  - Study new technical issues regarding ADN
GCC ADN Pilot Project: Current setup

AR-ROOT.NIC.NET.SA
212.26.18.12
(GCC Arabic Root Server)

• Slave for all the Arabic GCC ccTLDs.
  (Only NS records + any Glue A records)

AR-ROOT.NIC.AE
213.42.20.76
(GCC Arabic Root Server)

• Master for all the Arabic GCC ccTLDs.
  (Only NS records + any Glue A records)

AR-CCTLD.NIC.NET.SA
212.26.18.12
(SA Arabic ccTLD Server)

• Master for “السعودية”.

NS1.UAENIC.AE
213.42.0.226
(AE Arabic ccTLD Server)

• Master for “الإمارات”.

AR-ROOT.QATAR.NET.QA
212.77.192.68
(QA Arabic ccTLD Server)

• Master for “قطر”.

• Slave for all Arabic GCC ccTLD (".")

// file: named.conf

// e.g. : add these lines to your named.conf file.
// contact GCC-ADNS Taskforce to get the updated list
zone "xn--mgberp4a5d4ar" { // AlSaudiah
    type slave;
    file "sa.idn.zone" ;
    masters {213.42.20.76; }; }
zone "xn--kgbeam7a8h" { // Emarat
    type slave;
    file "ae.idn.zone" ;
    masters {213.42.20.76; }; }
zone "xn--wgbl6a" { // Qatar
    type slave;
    file "qa.idn.zone" ;
    masters {213.42.20.76; }; }

// file: named.conf

// e.g. : add these lines to your named.conf file.
// contact GCC-ADNS Taskforce to get the updated list
zone "xn--mgberp4a5d4ar" { // AlSaudiah
    type master;
    file "sa.idn.zone" ;}
zone "xn--kgbeam7a8h" { // Emarat
    type master;
    file "ae.idn.zone" ; }
zone "xn--wgbl6a" { // Qatar
    type master;
    file "qa.idn.zone" ;}

// File: sa.idn.zone.

$ORIGIN .
$TTL 10800 ; 3 hours
ar-root.nic.net.sa IN A 212.26.18.12
xn--mgberp4a5d4ar SOA ns1.uainic.ae. hostmaster.mail.emirates.net.ae. ( 4 ; serial
10800 ; refresh (3 hours)
300 ; retry (5 minutes)
604800 ; expire (1 week)
10800 ; minimum (3 hours)
) )
NS ar-root.nic.net.sa.
// add these lines to your named.conf file.
zone "xn--mgberp4a5d4ar" {
  type master;
  file "sa.idn.zone" ;
};

// file: sa.idn.zone
$TTL 172800 ; 2 days
@ IN SOA ar-cctld.nic.net.sa. hostmaster.isu.net.sa. ( 
2 ; serial
86400 ; refresh (1 day)
7200 ; retry (2 hours)
3600000 ; expire (1000 hours)
172800 ; minimum (2 days)
)
  NS ar-cctld.nic.net.sa.

; netaq
xn--mgb5a8an NS nsl.nic.net.sa.
xn--mgb5a8an NS ns2.nic.net.sa.

; dalel
xn--ugb6bax NS nsl.nic.net.sa.
xn--ugb6bax NS ns2.nic.net.sa.

; etc..
Resolver?

- Just add some zones (all Arabic ccTLD) to your Resolver configuration file
- Configure them as a “stub” zone
  - “stub” zone is like a “slave” zone, except that it replicates only the NS records of a master zone instead of the entire zone
- This will not affect the regular DNS queries

Client?

- PC + Internet connectivity
- ISP name server (Resolver) should support ADN OR
  The client can setup his own name server (Resolver)
- Any browser that support IDN
ADN Project: Supported applications

- **Browsers:**
  - Microsoft Internet Explorer 6.0 and higher + ISC’s IDN-OSS
  - Netscape 7.1 and higher
  - Mozilla 1.4 and higher
  - Mozilla Firefox 0.6 and higher (former Mozilla Firebird)
  - Opera 7.20 and higher
  - Konqueror (from KDE 3.2 + GNU IDN Library)
  - Epiphany 1.2.2 and higher
  - Galeon 1.3.14 and higher
  - Safari 1.2 and higher
  - Mozilla Camino 0.7 and higher

- **Email, Ftp and More:**
  - Check -> www.arabic-domains.org.sa
الأسهم السعودية

سريعة النمو في سوق الأسهم السعودية.

مقارنة مع:
www.tadawul.com.sa
The technical taskforce produced a number of technical documents:

- General Technical Introduction
- How to Setup Arabic root server
- How to Setup Arabic ccTLD server
- How to Resolve Arabic Domain Names (ISPS)
- Requirements for Resolving Arabic Domains (End Users)
After studying Applications that support IDN/AND some tools were developed:

- **IDN/ADN Converting Tool:**
  - Convert domain names form IDN to ASCII and vice versa

- **DNS checker for Arabic Domains:**
  - Check if an IDN domain name is hosted on any name servers

- **Host checker for Arabic Domains:**
  - Resolve IDN domains to the correspondent IP address and vice versa

- **Zone file editor for Arabic domains:**
  - Create and manage Arabic zone files easily using this zone editor

IDN/ADN Converting Tool

Welcome to the Arabic domain names converting tool which converts IDN to ASCII and vice versa.

Please fill in an Internationalized domain name and click on [IDN->ASCII] button to see its representation in ASCII format.

<table>
<thead>
<tr>
<th>domain name</th>
<th>ASCII representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>xn--mgb5a8an.xn--mgbrp4a5d4ar</td>
<td>نقد فعالة بإنخال</td>
</tr>
<tr>
<td></td>
<td>نسائة لسورية</td>
</tr>
<tr>
<td></td>
<td>الاسم المقابل له</td>
</tr>
</tbody>
</table>

DNS Checker

SaudINIC DNS checker Tool v2.0

[DNS Checker Summary]

Checking the domain name [نطاق.السعودية] on:

- Server 61.445.4.214
- Server 61.445.2.214

OK .. The name servers are hosting your domain name.
SaudiNIC Host checker Tool v2.0

[Host Checker Result]

Zone File Editor

ADNS Project: Work Still to be Done

- Apply it in all other Arab countries
  - Currently: SA, AE, QA, OM, TN, EG, SY
  - Soon will have: KW, BH
- Develop policies and regulations
- Make public seminars
- Share our experience with other Arab Countries
- Extend the project, under the League of Arab States’ supervision, to (all) other Arab Countries
What is next?

- Develop some policies, regulations and requirements:
  - Arabic ccTLD membership/participation policy and procedure (full members)
  - Resolution service membership (associate members)
  - Arabic domain name registrations

- Maintain a website for the project (arabic-domains.org)
  - All Documents and news regarding Arabic Domain Names and its Project
  - Mailing lists (Project Committees, ccTLD, Resolver, Registrant)
  - Latest downloadable resource file for the project
Last but not least: Important Note

- All participants and users should know that is a test project.
- This implies that neither the project nor the participants will be liable, under any circumstances, for anything related to the use of Arabic domain names, and
- They cannot guarantee the continuation of using the registered Arabic domain names.
Conclusion

- Having Arabic DNS is becoming an essential requirement to our community development
  - It is not a commodity!
- Local community can help in defining what they need and how they can be implemented
  - Reserve the development of Arabic language standards and tables to be done by Arabs derived from their respective community. [*local empowerment*]
- Hey! ... ICANN/IANA/MINC/ITU ...
  - We cannot wait forever for the realization of IDN
    *We need to speed up the implementation of Full IDN.IDN*
Questions

Thanks

xn--mgbtii4d