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Arabic Domain Names (ADN) Pilot Project

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This presentation is particularly due to:

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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)"

IDN: How it Works

- User inputs IDN

  نطاق .com.sa

- IDN is divided into several levels (labels)

  نطاق | com | sa

- non-ASCII labels are converted to ASCII using punycode

  mgb5a8an | com | sa

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

  xn--mgb5a8an | com | sa

- Labels are recombined back

  xn--mgb5a8an.com.sa

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

  xn--mgb5a8an.com.sa IN A 66.225.214.20

ADN: Existing Solutions

- 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 (?!)

ADN Pilot Project: Introduction (1)

- 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

ADN Pilot Project: Introduction (2)

- 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

- 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 ☑

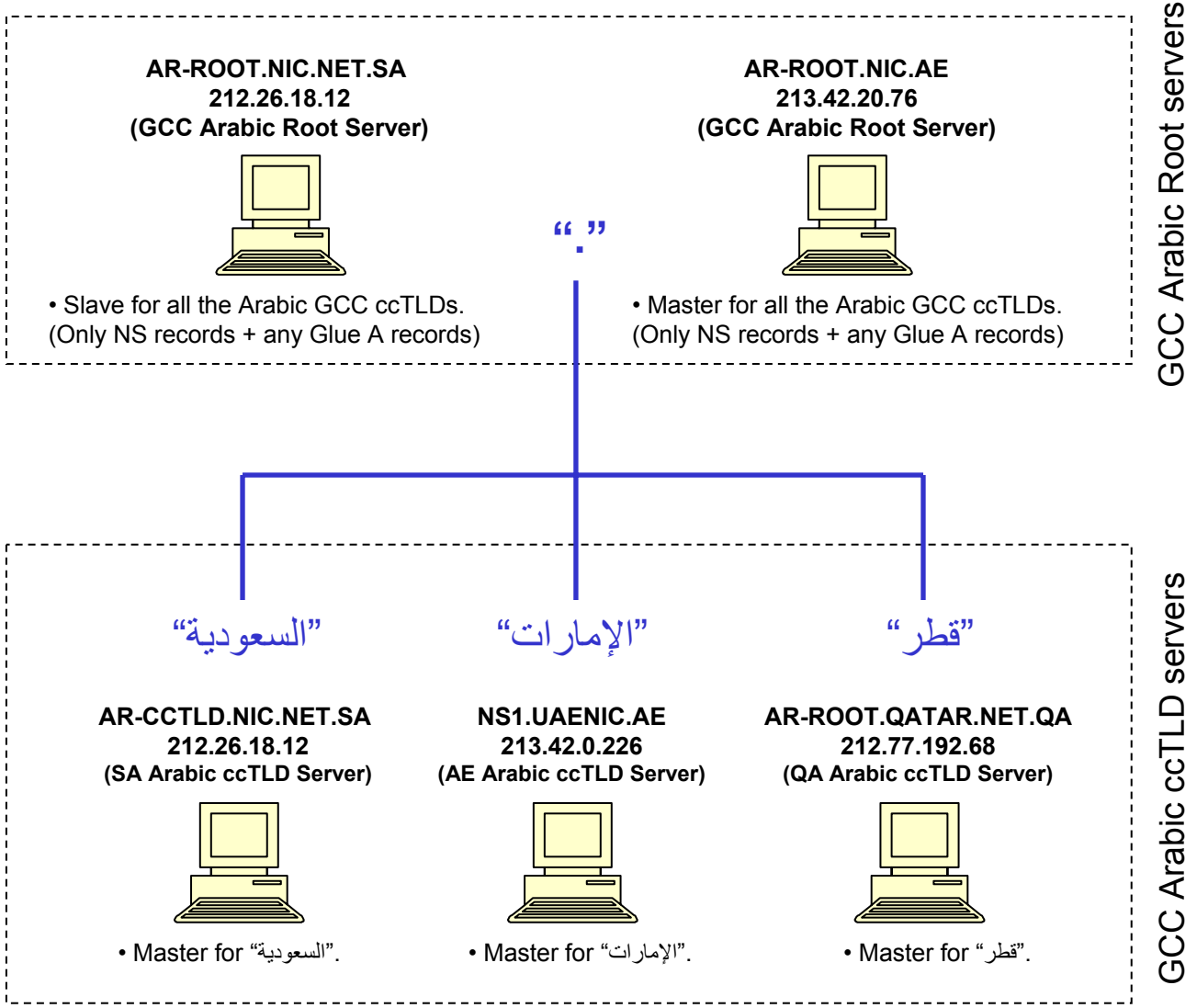
ADN Project: Progress

- 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

ADN Project: Committees

- 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
(SA Arabic main Server)

Request zones information

Send zone transfer for them

AR-ROOT.NIC.AE
213.42.20.76
(AE Arabic main Server)

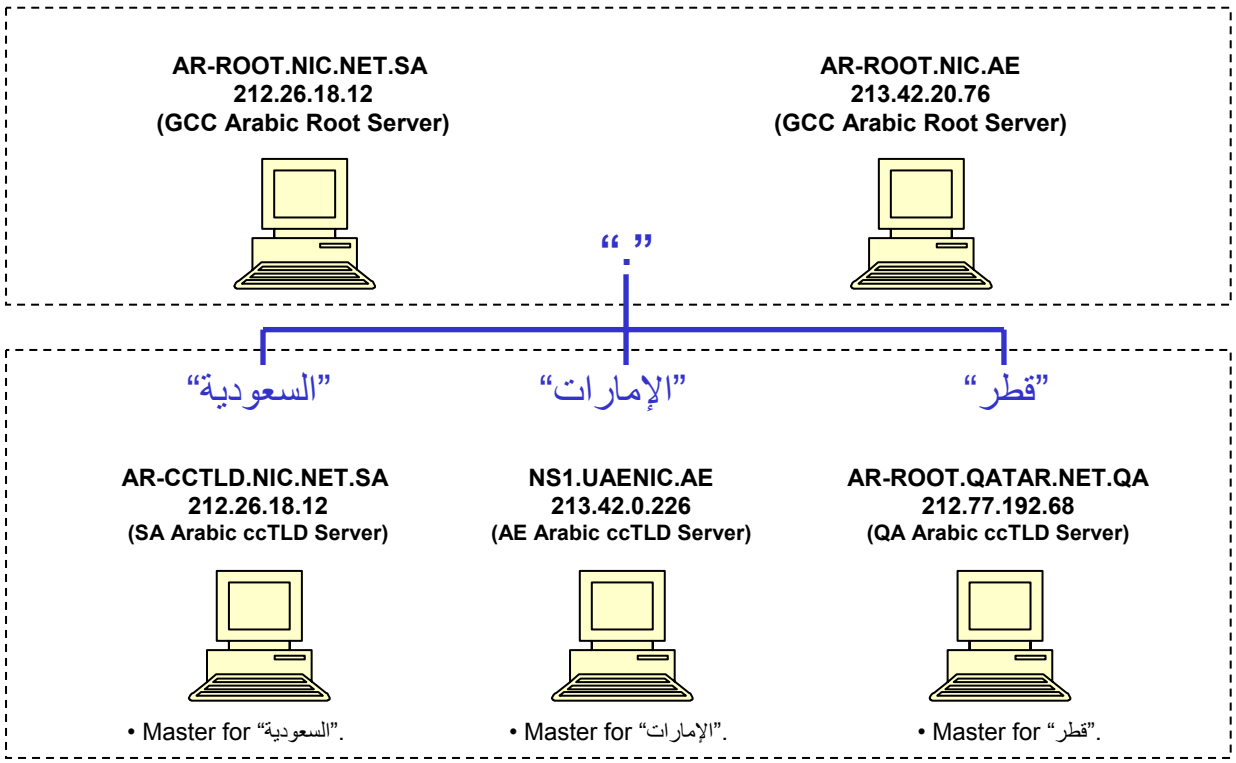
- Slave for all Arabic GCC ccTLD (“.”)

- Master for all Arabic GCC ccTLD (“.”)
- Can be separated to hidden name server

```
// 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.uaenic.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.
```



GCC Arabic Root servers

GCC Arabic ccTLD servers

```
 //add these lines to your named.conf file.
zone "xn--mgberp4a5d4ar" {
        type master;
        file "sa.idn.zone" ;
;{
```

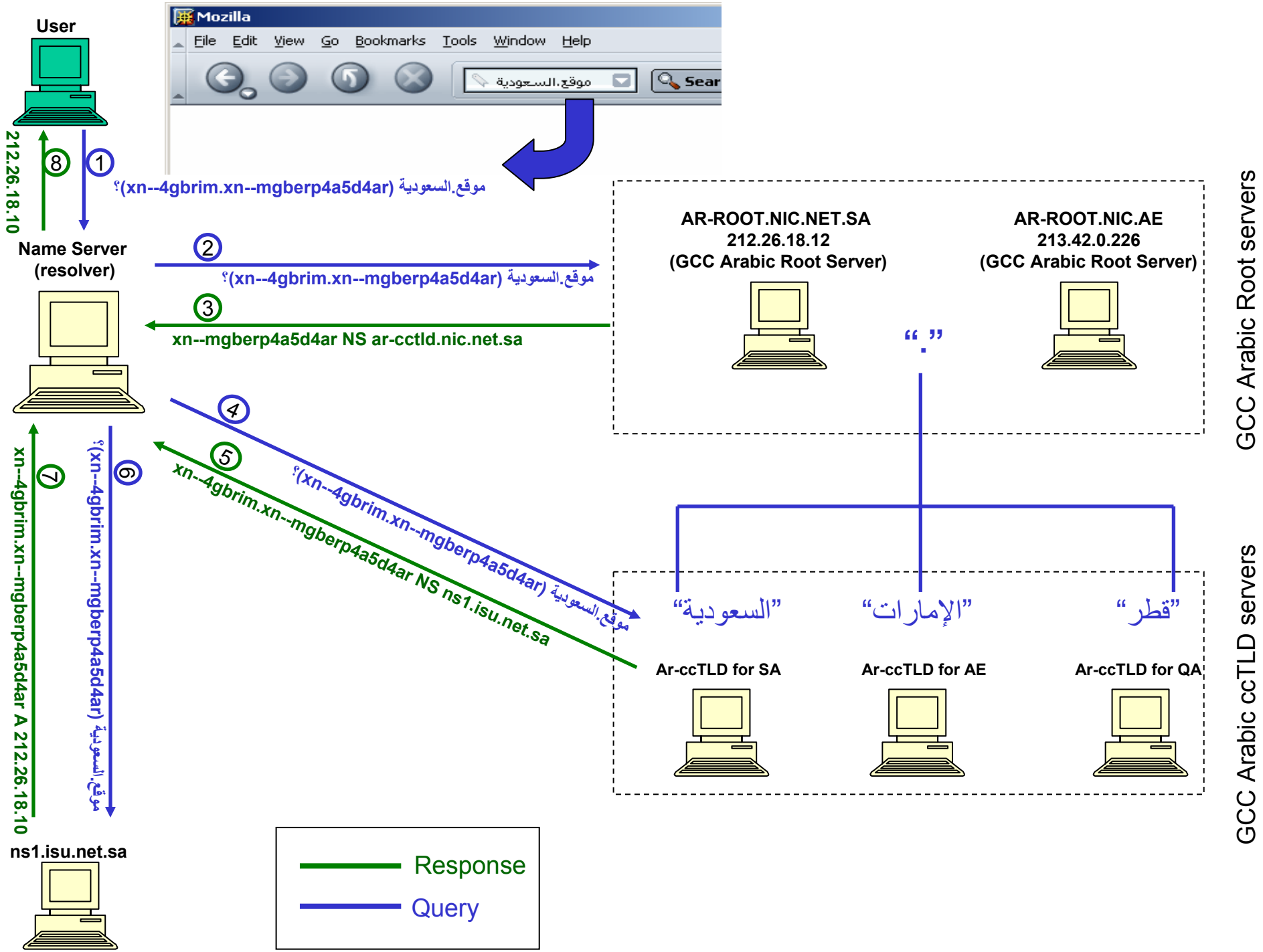
```
// file: sa.idn.zone
$TTL 172800     ; 2 days
@            IN SOA  ar-cctld.nic.net.sa. hostmaster.isu.net.sa. (
                                2          ; serial
                                86400      ; refresh (1 day)
                                7200       ; retry   (2 hours)
       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

; netaq
xn--mgb5a8an            NS      ns1.nic.net.sa.
xn--mgb5a8an            NS      ns2.nic.net.sa.

; dalel
xn--ugb6bax             NS      ns1.nic.net.sa.
xn--ugb6bax             NS      ns2.nic.net.sa.
;
; etc..
```

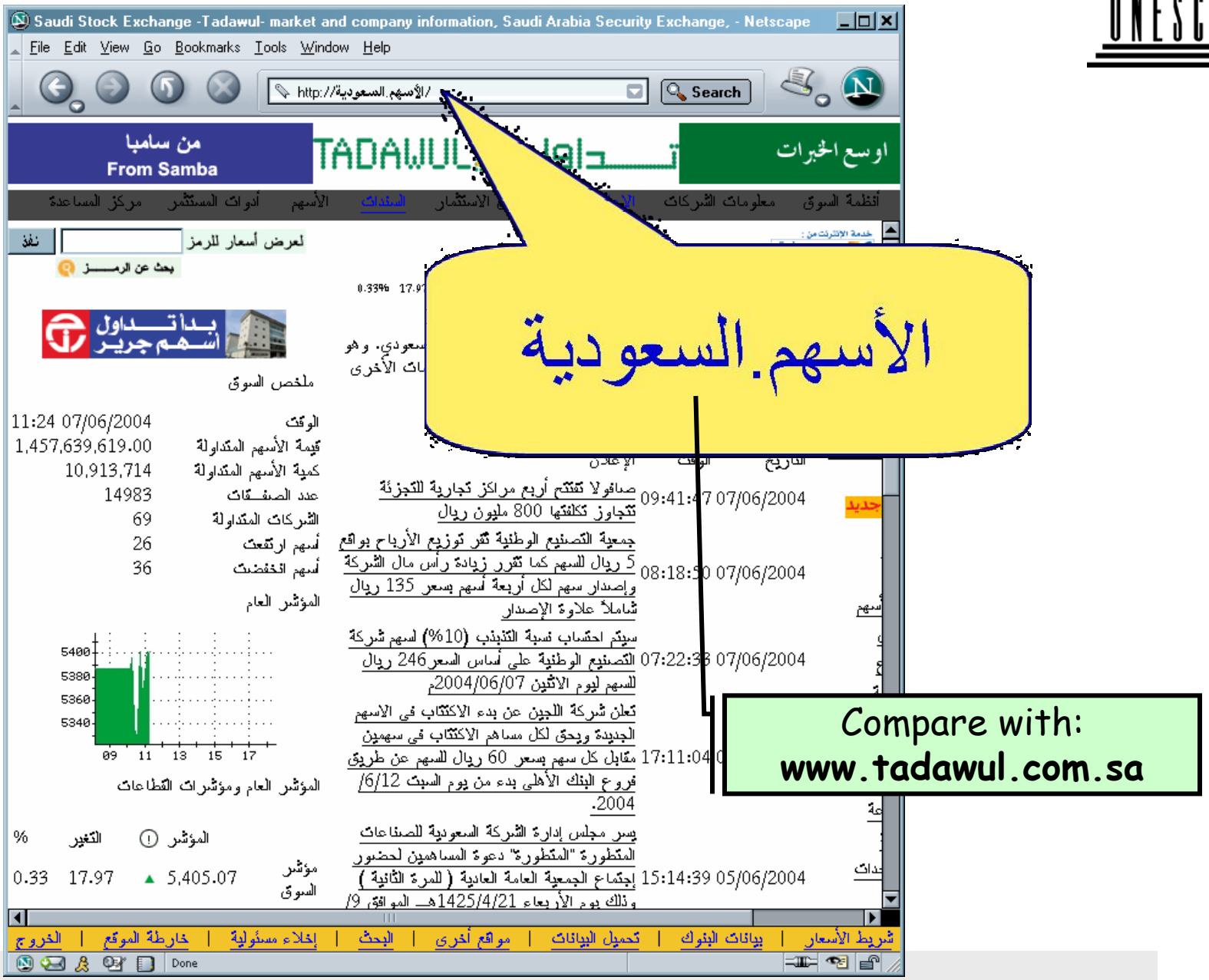
ADN Project: How to Resolve ADN

- 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


User
Mozilla
File Edit View Go Bookmarks Tools Window Help
موقع.السعودية
Sear
212.26.18.10
8
1
موقع.السعودية (xn--4gbrim.xn--mgberp4a5d4ar)؟
Name Server
(resolver)
2
موقع.السعودية (xn--4gbrim.xn--mgberp4a5d4ar)؟
3
xn--mgberp4a5d4ar NS ar-cctld.nic.net.sa
AR-ROOT.NIC.NET.SA
212.26.18.12
(GCC Arabic Root Server)
AR-ROOT.NIC.AE
213.42.0.226
(GCC Arabic Root Server)
“ ”
GCC Arabic Root servers
4
موقع.السعودية (xn--4gbrim.xn--mgberp4a5d4ar)؟
5
xn--4gbrim.xn--mgberp4a5d4ar NS ns1.isu.net.sa
7
xn--4gbrim.xn--mgberp4a5d4ar A 212.26.18.10
6
موقع.السعودية (xn--4gbrim.xn--mgberp4a5d4ar)؟
“السعودية”
“الإمارات”
“قطر”
Ar-ccTLD for SA
Ar-ccTLD for AE
Ar-ccTLD for QA
GCC Arabic ccTLD servers
ns1.isu.net.sa
Response
Query


Saudi Stock Exchange -Tadawul- market and company information, Saudi Arabia Security Exchange, - Netscape
File Edit View Go Bookmarks Tools Window Help
http://الأسهم.السعودية/
Search
من سامبا
From Samba
TADAWUL
اوسع الخبرات
الأسهم.السعودية
Compare with:
www.tadawul.com.sa

ADN Project: Technical Documentation

- 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)

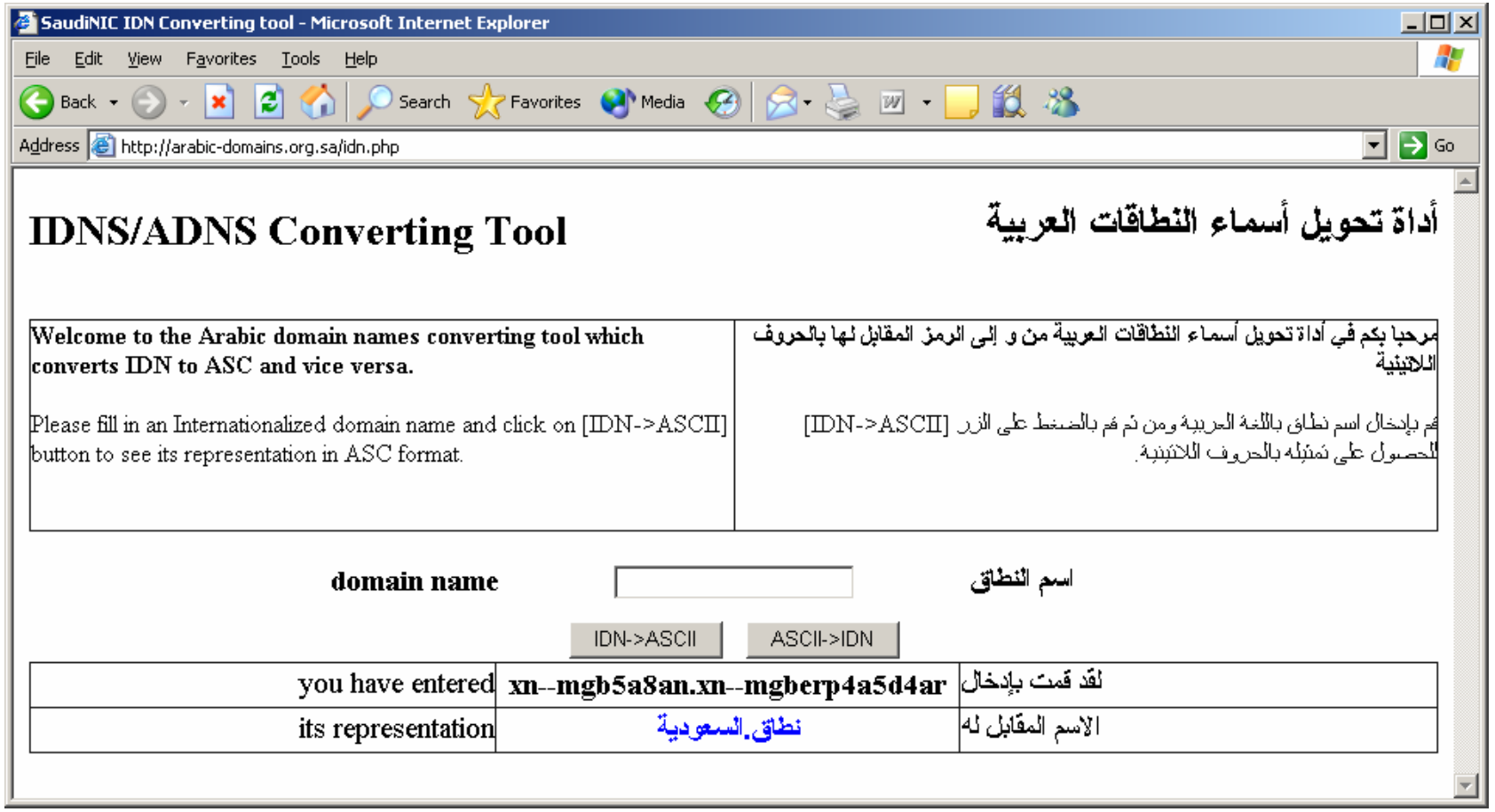
ADN Project: Tools

After studying Applications that support IDN/AND some tools were developed:

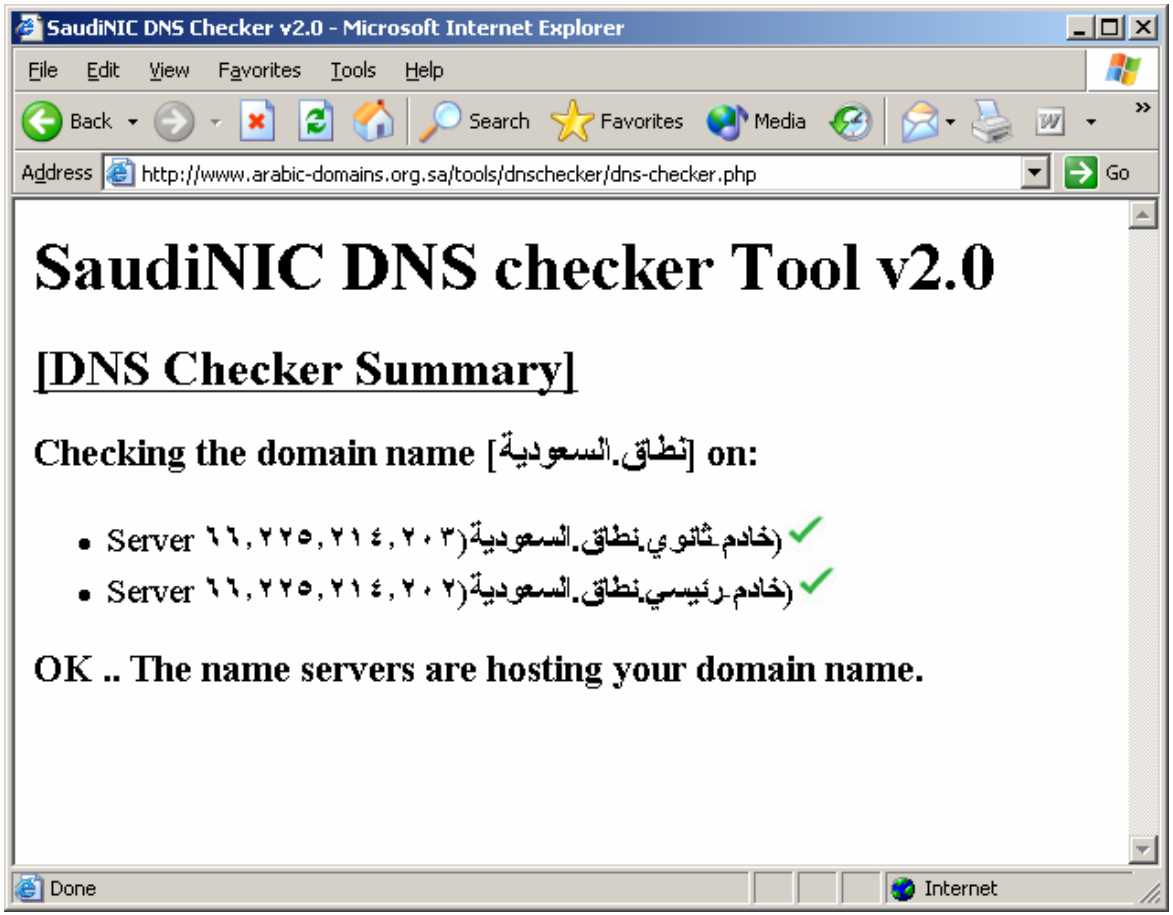
- IDN/ADN Converting Tool:
  - Convert domain names form IDN to ASCII and vice versa
- DNS checker for Arabic Domains:
  - Check if an IDN domain name is hosted on any name servers
- Host checker for Arabic Domains:
  - Resolve IDN domains to the correspondent IP address and vice versa
- Zone file editor for Arabic domains:
  - Create and manage Arabic zone files easily using this zone editor

http://www.arabic-domains.org.sa/tools.php

IDN/ADN Converting Tool

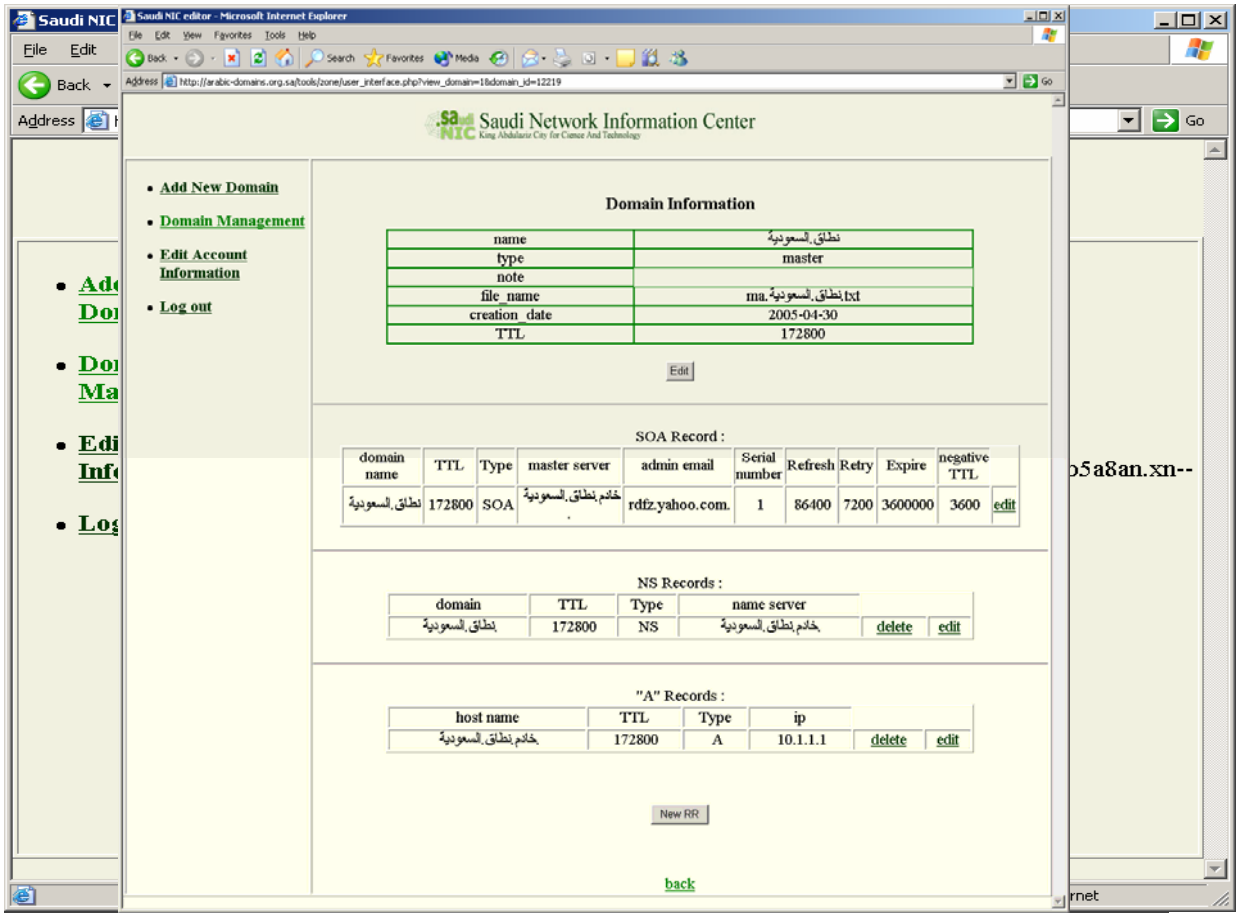


DNS Checker


SaudiNIC DNS Checker v2.0 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.arabic-domains.org.sa/tools/dnschecker/dns-checker.php
Go
SaudiNIC DNS checker Tool v2.0
[DNS Checker Summary]
Checking the domain name [نطاق.السعودية] on:
Server ٦٦,٢٢٥,٢١٤,٢٠٣(خادم_ثانوي.نطاق.السعودية)
Server ٦٦,٢٢٥,٢١٤,٢٠٢(خادم_رئيسي.نطاق.السعودية)
OK .. The name servers are hosting your domain name.
Done
Internet

Host Checker

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--mgbti4d