(مصر.)
.Masr IDN registry system

National Telecom Regulatory Authority Of EGYPT (**NTRA**)

(20 Min)

NTRA
EGYPT
National Telecom Regulatory Authority
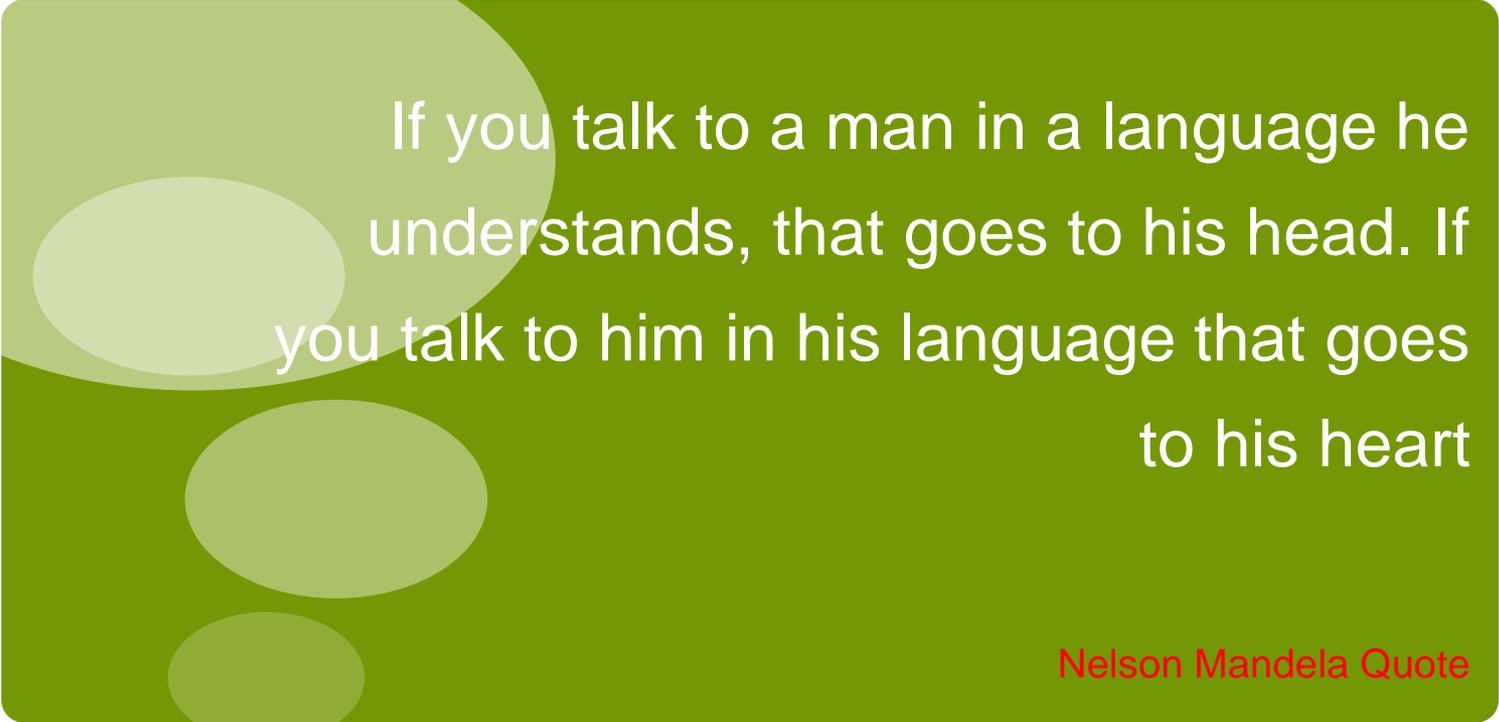
If you talk to a man in a language he understands, that goes to his head. If you talk to him in his language that goes to his heart

Nelson Mandela Quote

Contents

Reviewed by NTRA of EGYPT

Why and How IDN ?

Realize the power of .COM and .NET in our Local languages Why !!!

How can DNS understand IDN ?
IDNs in applications

50%+ of Internet population lives in non-Latin Language speaking countries

Internet Users in the World
Distribution by World Regions - 2014 Q2

Region	%
Asia	45.7%
Europe	19.2%
Lat Am / Carib.	10.5%
North America	10.2%
Africa	9.8%
Middle East	3.7%
Oceania / Australia	0.9%
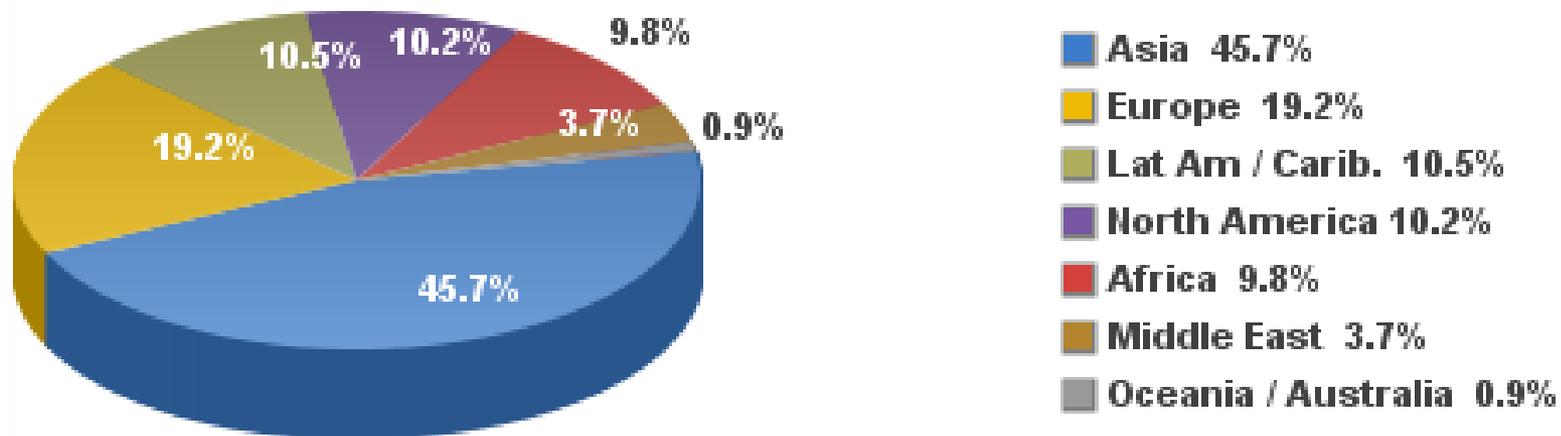
Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 3,035,749,340 Internet users on June 30, 2014
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World report on Internationalized Domain Names 2014

IDNs in applications

- Web Browsers :-

  - ❑ The 5 most popular browsers have strong support for IDNs in their latest versions with varied approaches.

  - ❑ Poor support for IDNs in mobile devices.

IDNs in applications

- Email Clients:-

  - ❑ Most popular email clients (i.e. Outlook, Mozilla Thunderbird, Gmail) don't support IDNs!

  - ❑ 2011 EURid survey: 82% believed email support as a key challenge to adopt IDNs!

- Popular Applications:-

  - ❑ Lack of support for IDNs in popular applications and websites in the creation of user accounts (e.g. Facebook)!
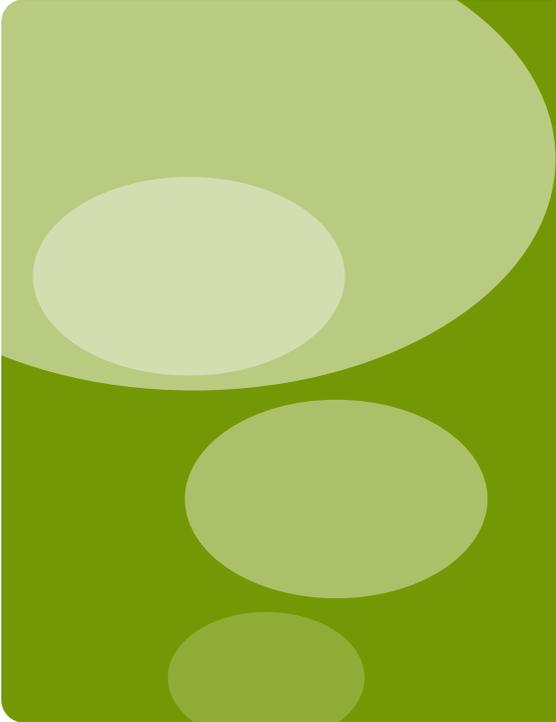
.Masr Environments

.Masr Environments

.Masr system design

.Masr Environment's

Internet

Staging Enviroment

Production Enviroment

External IP's

NTRA Zone IP's
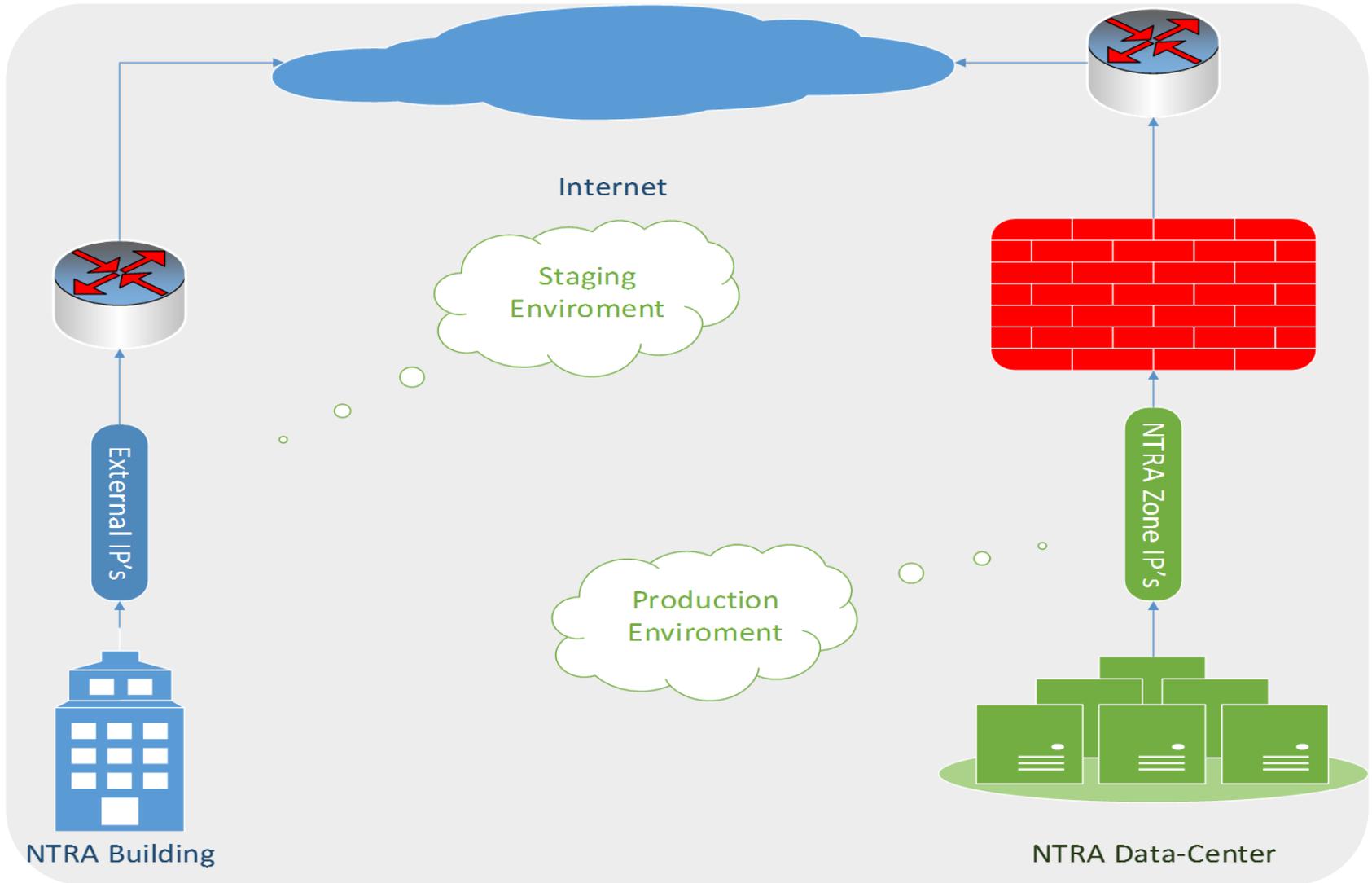
NTRA Building

NTRA Data-Center

.Masr System Design
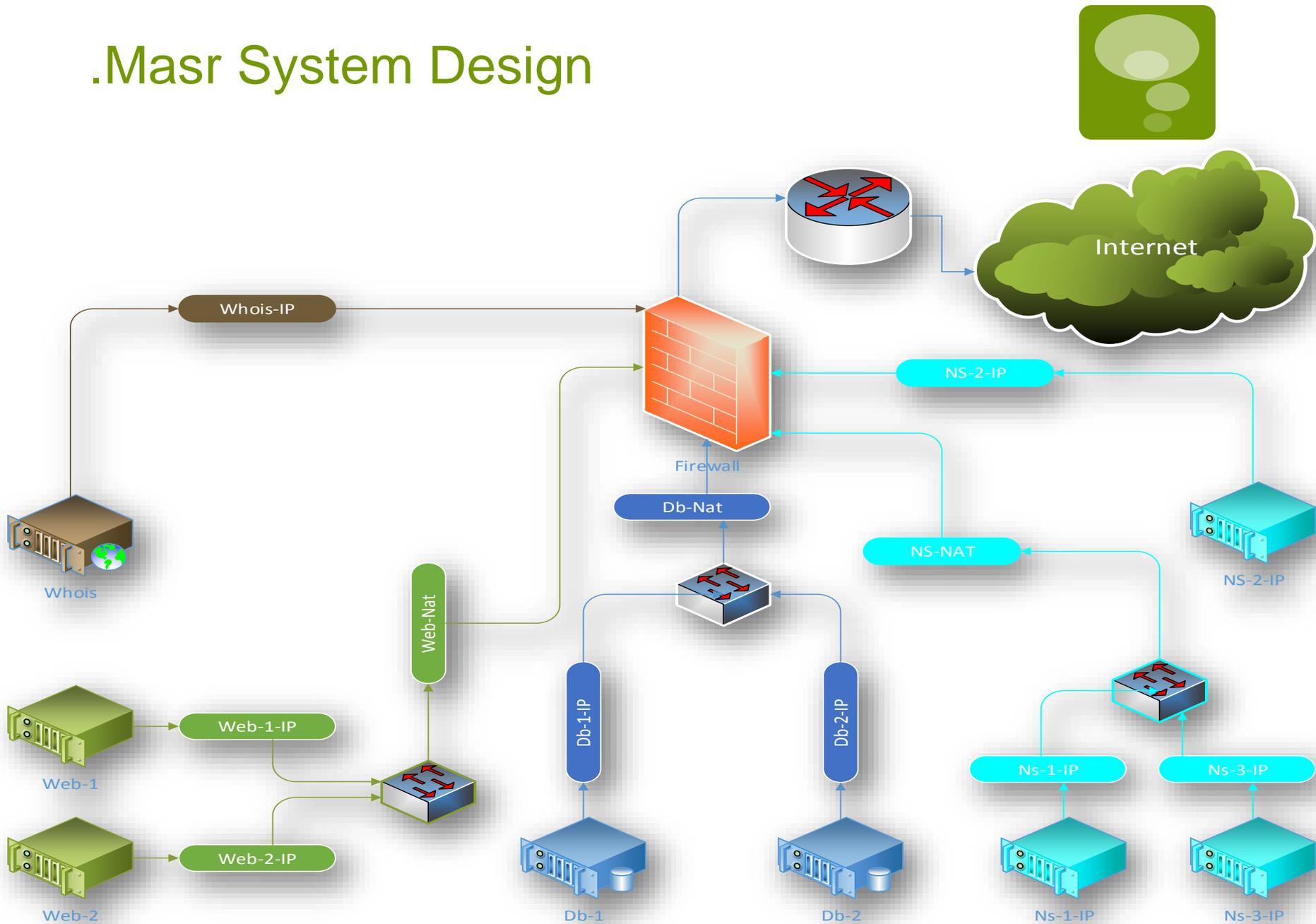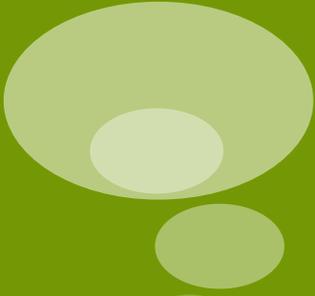
Registry Components

(CoCCA)

CoCCA & Fred Registry Components

CoCCA Main Components

- PostgresSQL database

- Resin application server

- Java

CoCCA Registry Installation & Initialization

❑Installer stack (Resin , Java , PostgresSQL) → One runnable file which includes all necessary packages.

❑Through web-admin. (**Only Registry admin created through the installation of CoCCA registry**)

Diagrams

CoCCA Registry

REGISTRANT "A"

REGISTRANT "B"

REGISTRANT "C"

Internet Query (Whois)

Internet Query (DNS)

REGISTRAR | GUI Only
Manual Registration
Small / Medium Sized Registrar

RESELLER

Connects to Registrar
Relationship with Registrar

DNS Servers

TLD Administrators
GUI Access Only

REGISTRAR ("Full Service")
High Volume & Automated
GUI and EPP access

Anycast (published in root)
Sanctioned (ISP/Telco – not published)

NIC DNS Server (published in root)

NOC

GUI : Administrator and Registrar Access

Java Application
RESIN (Caucho) Java scheduler / interpreter

EPP Server

(Java)

Whois Server
(Integrated
With GUI)

Hidden "private" DNS master

BIND

Database Server - postgresql

Backup Server - local NOC

Registry Backup - off site NOC

.Masr Registry

| Registrant " A " | | Registrant " B " | Registrant " C " | Internet Query (Whois) | Internet Query (DNS) |

| Registrar (GUI) | | Reseller |

| TLD Administrators | | Registrar (GUI & EPP) | | Whois Web Interface (Whois Client) | DNS Server (2 Links from different ISP's) |

| Administrator and registrar access | EPP Server (JAVA) | Whois service running | Stealth DNS |

Identical Environments Active – Standby → System (Manual)

| Administrator and registrar access | EPP Server (JAVA) | Whois service running | Stealth DNS |

| Database server - PostgresSQL | **DB Replication** | Database server - PostgresSQL |

CoCCA Registry

Pros , Cons and Ugly

CoCCA Pros [1].

- English / French web interface.

- Free & Open source components used.

- Become registry with all functionality in a few minutes.

- 3-R Model.

- All management through web-admin.

- No direct connection to registrants.

- All objects inside registry database " Registrars , logins , domains ……… etc. "

- Naming restriction (Block , Wait for approval).

CoCCA Pros [2].

- Contact address policy.

- E164 phone numbers

- Notification Management for both Registrars , Registrant and Administrators

- Automation run-times.

- Fully compatible with IDN.

- Character folding.

- Client certificate authentication.

- Whois response customization.

- Deleted domain marked as deleted but remains at database.

CoCCA Pros [3].

- Domain name lifecycle setting.

- Stealth DNS.

- DNSSEC compatible.

- Registry application automatic update. ……..

- EPP IP restrictions (Host , Network and Range).

- Database maintenance (clean-up , make and schedule backups).

- ICANN statistics.

- IPV6 support.

CoCCA Pros [4].

- CHIP verifications.

- SMS Setting.

- IPV6 support.

- Full history of changes.

- Data escrow.

- Fast Flux

- Contact proxy.

- CAPTCHA protection.

CoCCA Cons [1].

- CoCCA does not publish source-code , if you need it , you should ask for.

- Every time you update registry application , you must test it first and be sure that is functionally well.

- If you wish to work in a two tier environment , you should make a workaround.

- CoCCA depends on client testing. " To be honest , CoCCA support is excellent "

CoCCA Cons [2].

- In case of using client certificate management , certificate management is much harder to manage.

- Modularity.

CoCCA Ugly [1].

- Report customization.

- Registry statistics.

IDN Challenge

IDNs versus ASCII WW

IDN Versus ASCII

IDN
2%

ASCII, 98%,

■ ASCII   ■ IDN

World report on Internationalized Domain Names 2014
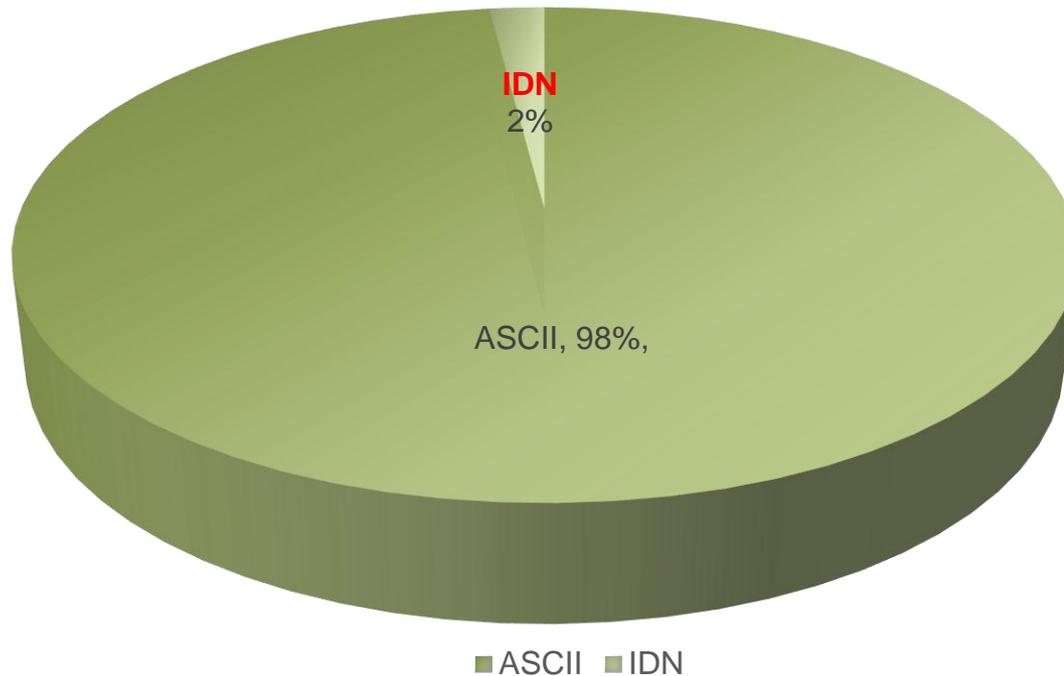
Issues

- I tried to follow a link "مصر.نترا" and the browser transforms it to xn--......xn—wgbh1c , What is this this !!!!

- I can not use my IDN email to register for my facebook account !!!!

- I never heard about domain name in a my own local language !!!

Challenges

- Lack of domain name market and its related industries.

- Ubiquity.

- User experience.

- Lack of Awareness.

- Trust.

- Changing all the application software to support IDNs.
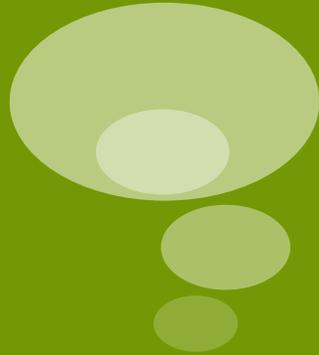
Homograph

How NTRA address the issue of homograph ?

Kaminski Attack and DNSSEC

How do you attack DNS "Cache Poisoning"? [1]

Query: bank.com ?

Response: bank.com = 1.1.1.1

Bank.com
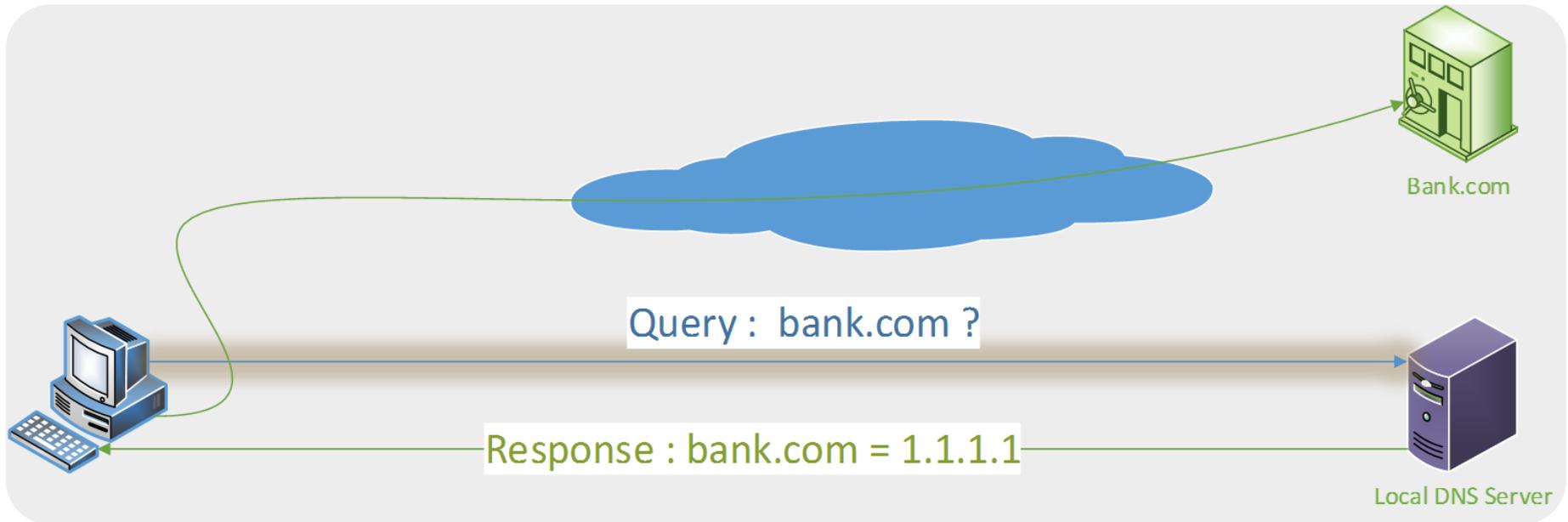
Local DNS Server

Basic DNS Operation

DNS Cache Operation [1]

DNS Cache Operation 2
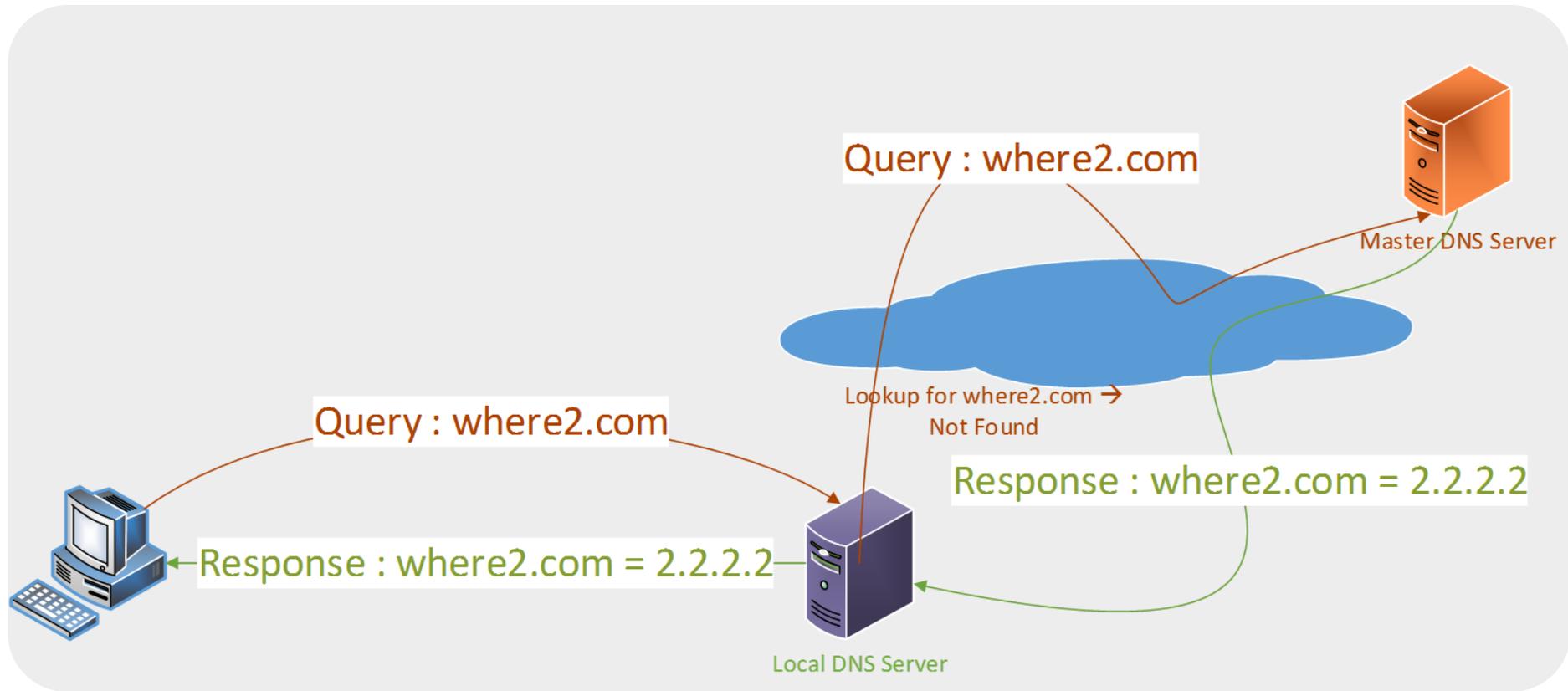
DNS is not secure

Why ?

How do you attack DNS
" Cache Poisoning " ?2
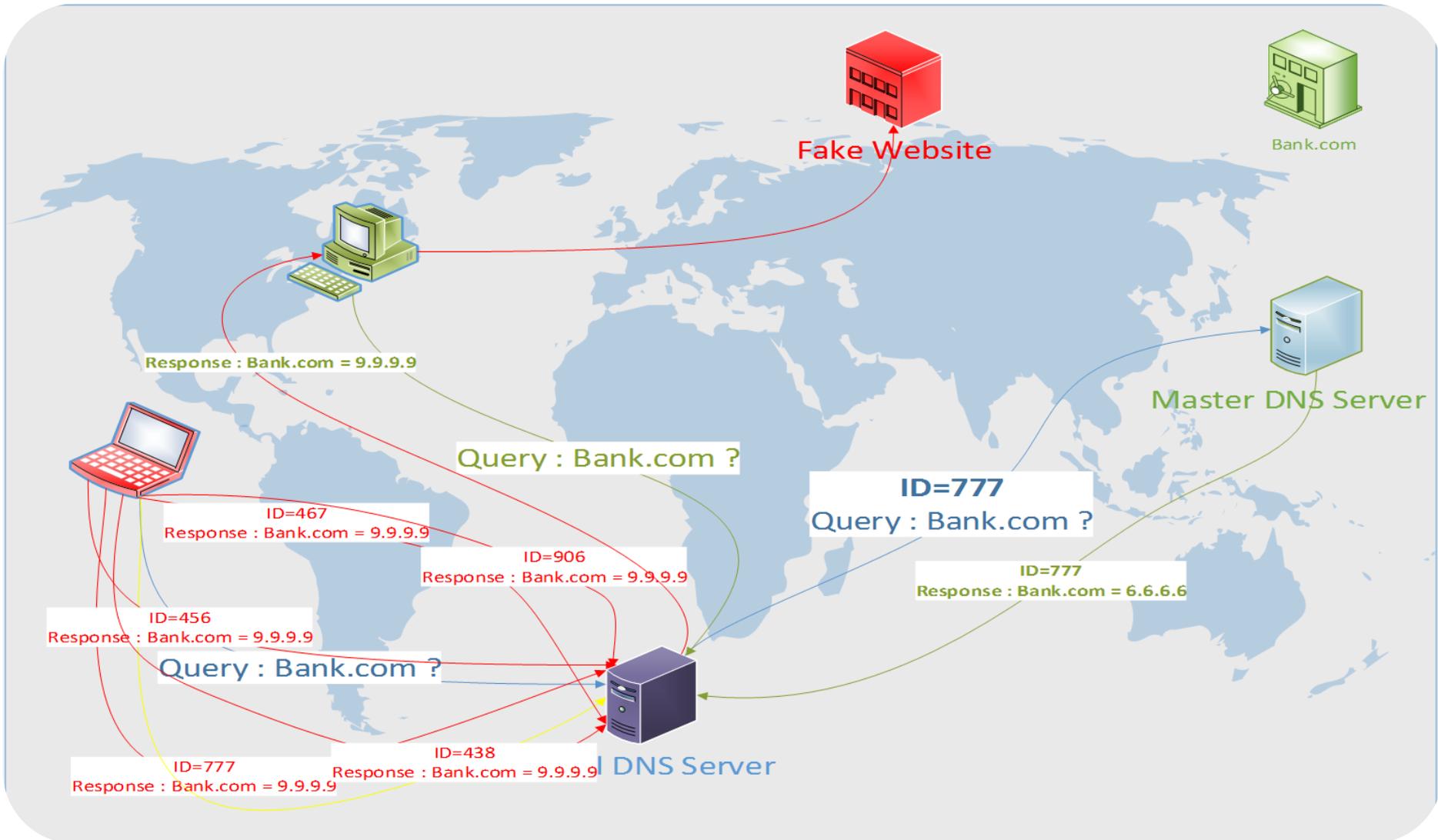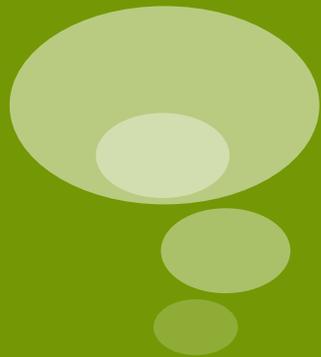
Cache Poisoning Prevention

Short-Term , Long-Term