

# INTRODUCTION TO CCTLDS AND STATUS OF AFRICAN CCTLDS

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## AGENDA

- ◉ Introduction to ccTLDs
  - DNS Basics
  - History of ccTLD
  - ccTLD Basic
- ◉ Status of ccTLDs in Africa
  - Organizational Status
  - Technical Status
  - Operations
- ◉ Conclusion

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## ABBREVIATIONS

- ◉ ICANN - Internet Cooperation for Assigned Names & Numbers
- ◉ ccNSO - Country Code Name Service Organization
- ◉ TLD - Top Level Domain
- ◉ DNS - Domain Name System/Services
- ◉ IANA - Internet Assigned Numbers Authority
- ◉ IDN - International Domain Name
- ◉ URL - Uniform Resource Locator

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# INTRODUCTION TO CCTLDS

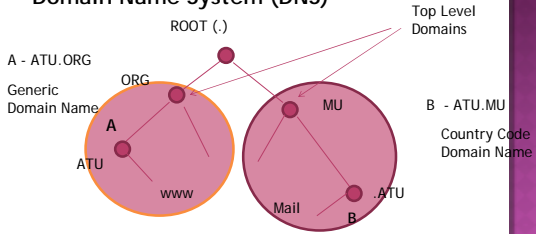
## DNS INTRO

- ◉ DNS -- Domain Name System - people use names
- ◉ Resolves names to IP addresses
- ◉ Names: people readable -- supported by dots  
mail.atu.org - structured right to left
- ◉ Scalable distributed system
- ◉ Data stored on hierarchically ordered machines
- ◉ Nameservers - queried by resolvers on clients
- ◉ DNS is now critical infrastructure

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## WHAT IS DNS?

### Domain Name System (DNS)



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## TLD & CCTLD

- TLDs are divided into two main classes
  - gTLD - generic TLDs
    - .com, .org, .net ....
    - Sponsored ones : .mobi, .museum, .travel
  - ccTLD - country code TLDs
    - Assign to - used and reserved for use by a country or territory
    - .mu, .za, .ke.
  - IDN - To address language issues on the Internet
    - *need for major rethink of classification*

## CCTLD NAMING

### Flat Vrs Hierarchical

- Flat
  - Registrations directly on the TLD
  - .tg, .ci
- Hierarchical
  - Registrations at the second level of TLD
  - Three types of naming
    - Two letter (.co.za, .ac.ke)
    - Three letter (.com.gh, .edu.ng)
    - Mixed (.co.uk, .org.uk)

## HISTORY OF CCTLD

- Conceived by Jon Postel in the 80s
- Aim was to assist in organizing Internet addressing
- Chose to use two letter code ISO- 3166
- ISO 3166-1:based on UN lists of territories
- ccTLDs: Not originally intended to be official
- First come - to manage ccTLD - first served
- ICANN/IANA - does not create ccTLDs
- Most early ccTLD in Academia

## ESTABLISHMENT OF CCTLDS


- .uk - First ccTLD operational
- Now ~ 245 ccTLDs - global
- Political changes cause sunrise and sunsets for ccTLDs
- Zaire - .zr - sunset
- Congo-DRC - .cd - sunrise
- Others: USSR, Yugoslavia, ...

## CCTLD BASIC

- ccTLD: geographic, country, national, community
- Two letter coded TLD
- Based on country codes in ISO 3166-1
- Represents national, territorial interests
- Internet identity
- Flagship of country's Internet participation
- ?? Owned by a country ?? Trademark ??
- DNS - ccTLD is operationally just another TLD

## CCTLD SETUP

- Manager - sponsoring organization
- Recognized by root ~ ICANN/IANA
- Contacts: Admin, Tech
- Registry - registrar (s) - whois
- Nameservers - entered in root
- Policy - local - national law applies
- Serves national Internet community + global
- Maintains global interoperability



## STATUS OF CCTLD IN AFRICA

(Based on Research by AFTLD Research Unit)

### CCTLD STATUS

- Elements of status
- Relationship with local community - presence
- Relationship with national government
- Level of registry operations
- Size - penetration
- Delegation from IANA
- Agreements/relationship with ICANN
- DNS, Nameservers, use and stability

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### CCTLD STATUS IN AFRICAN

- 56 ccTLDs in Africa - based on data collected
- First 1990: .za, .eg
- Last 1998: Comoros .km
- Not assigned: one - .eh
- Sunsets - Zaire .zr
  - .zr ISO3166 change 1997
  - .zr deleted in root 2001

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### AFRICAN CCTLD - SPONSORING ORG.

- ccTLD manager
  - IANA 1999-11, 2008-3
- Org Type:
  - University (U)
  - Telco(T),
  - Private (P),
  - Government(G)
- Gov's showing more interest
- Org - URL exists? Y/N
  - 9 ccTLD still has no URL at IANA

#### TYPE

Year	U	T	P	G
2008	12	14	15	10
1999	18	10	15	5

#### URL

Year	YES	NO
2008	40	10
1999	25	25

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### AFRICAN CCTLD - SPONSORING ORG -II

- IANA requires admin contact to be in country
  - Residence - 1999 - all in country except:
    - Clearly out: .cx .so .ng .rw
    - Not clear: .bi .cd .cg - managed in Switzerland
    - Not registered by 1999: .td .km .gq
  - Residence - 2008 - all in country except: .so
    - Not Clear: .cd .cg .rw : managed by NIC-Congo

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### AFRICA CCTLD TECH CONTACT

- Runs nameservers +? registry
- Resides In/Out-of Country? graph
- Tech(s) Still abroad in 2008
  - USA: .er .ng .gn .lr .so .tz
  - Switzerland: .cd .cg .rw
  - Canada: .tg,
  - Germany: .gw
  - Portugal: .ao .cv
  - Sweden: .st
  - RSA: .ls

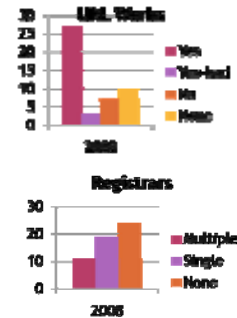
#### Tech Local

Year	In	Out
1999	30	22
2008	38	15

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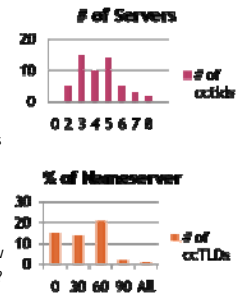
## AFRICA CCTLDS - REGISTRY URL

- URL for registration
- URL@IANA: 2008
- Works? - yes / no
  - No: .gw .so .td .km .cm .dj .eg .sn .bf
- None: .cv .cd .er .ls .cf .ga .mz .bw
- Bad: .gq .et .ne
- Single Point Registries
- Multiple Registrars



## AFRICA CCTLD - DNS

- Number of nameservers - root
- Stability indicator - seen from root
- DNS: 13 nameservers max
- Root has glue - IPs matter also
- ccTLDs now have 2 to 8 servers
- Graph - distribution
- % of nameserver on ccTLD - glue
- ~15 countries - no server on cc
- 1 cc has all servers on cc -- .gw
- Check if DNS works on each cc?



## AFRICA - CCNSO MEMBERSHIP

- Country Code Name Support Organization
- ICANN Regions - 5 - AF, AP, EU, LAC, NA
- ccNSO established in 2003 - Launching Group
- Opportunity for ccTLDs to be heard on global stage
- Africa has 20 out of the 76 members - representation ok
- Issues - regions - .re - IDN - security - DNSSEC
- AFTLD membership - new development

## CCNSO MEMBERSHIP

	2003	2004	2005	2006	2007	2008	Total
AF	11	3	0	0	2	4	20
AP	8	3	2	1	2	5	21
EU	2	3	0	3	1	2	11
LAC	10	3	0	5	2	0	20
NA	4	0	0	0	0	0	4
Tot	35	12	2	9	7	11	76

## CONCLUSION - STATUS OF AFRICAN CCTLD

- Every African country has a working ccTLD: 56
- Management has improved since 1999 - But:
- At least 4 ccTLDs managed from abroad
- ~> 15 ccTLDs technical running is abroad
- >50% have no registry URL at IANA
- >40% are single point registries
- Improving regional+global participation - ccNSO
- Governments getting more involved in ccTLDs
- More to be done - development - AFTLD