

ccTLD RETIREMENT

AN INTRODUCTION

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1. Introduction
2. Domain Name System
3. Terminology
4. ISO
5. Retirement
6. Complications

INTRODUCTION

WHAT IS THIS ABOUT?

- Short Introduction to the DNS
 - Technical
 - Administrative
- Terminology
- ccTLD Retirement
 - What?
 - Why?
 - How?

DOMAIN NAME SYSTEM

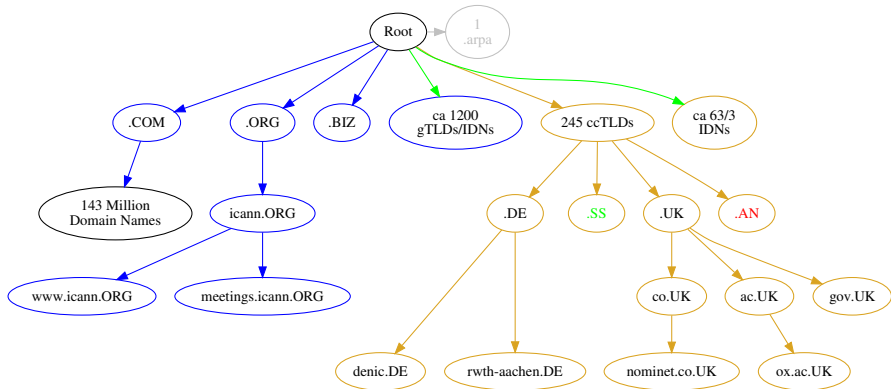
FIRST, THERE WAS THE ARPANET

- HOSTS.TXT
 - Single File
 - Downloaded By All
 - *Bandwidth* Issues (NIC)
- Flat Namespace
 - Inflexible
 - Did not Scale

THEN CAME THE DNS

- Domain Name System
 - P Mockapetris
- Design Goals
 - Consistent Name Space
 - Distributed
 - Extensible
 - Work for Multiple Applications
 - Independent of Underlying Carrier
 - ...

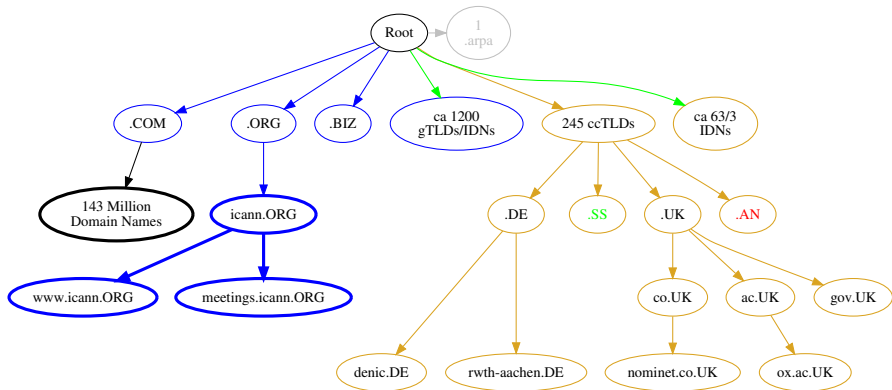
DOMAIN NAME SPACE



DESIGN ELEMENTS OF THE DNS

- Components
 - Domain Name Space
 - Resource Records
 - Name Servers
 - Resolvers
- Interactions
 - Users with applications
 - Applications query (local) Resolvers
 - Resolvers query Name Servers (Caches)
 - Name Servers keep Zones (Resource Records)

ZONES



ZONES

- Zone Files
 - Specify Resource Records
 - SOA, A, AAAA, MX, RRSIG
- Zones (Zone Files) can be
 - *Primary* (original (or *master*) copy)
 - Text file (database generated)
 - *Secondary* ((*slave*) copies)
 - Text file (transferred)
- Data Distribution
 - Preplanned Pushes (Zones)
 - Random Pulls (Queries)

WHAT'S IN A (DOMAIN) NAME?

“The domain name of a node is the list of the labels on the path from the node to the root of the tree.” [RFC 1034](#)

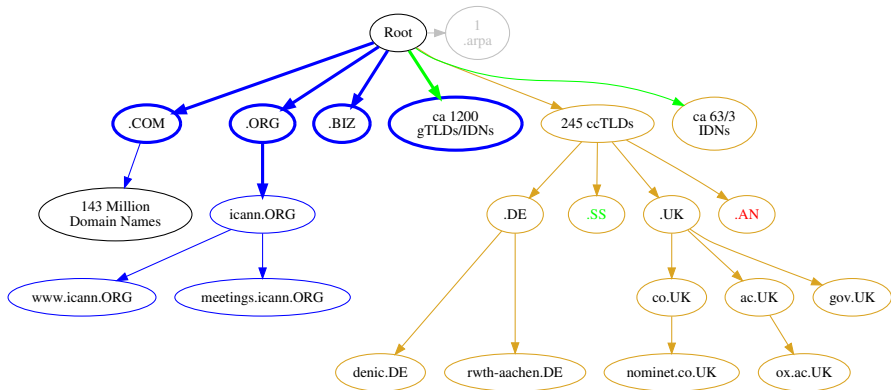
”In the Domain Name System (DNS) naming of computers there is a hierarchy of names. The root of (!) system is unnamed. There are (!) a set of what are called “top-level domain names” (TLDs).” [RFC 1591](#)

“A domain name is an identification string that defines a realm of administrative autonomy, authority or control within the Internet.” [Wikipedia](#)

TOP LEVEL DOMAIN NAMES

- **Generic Top Level Domains**
 - gTLDs
- **Purpose based**
- **Finite Number**
- **Process**
 - **Contractual relationship with ICANN**
 - Compliance
 - **Recourse**
 - Independent Review Process (IRP)

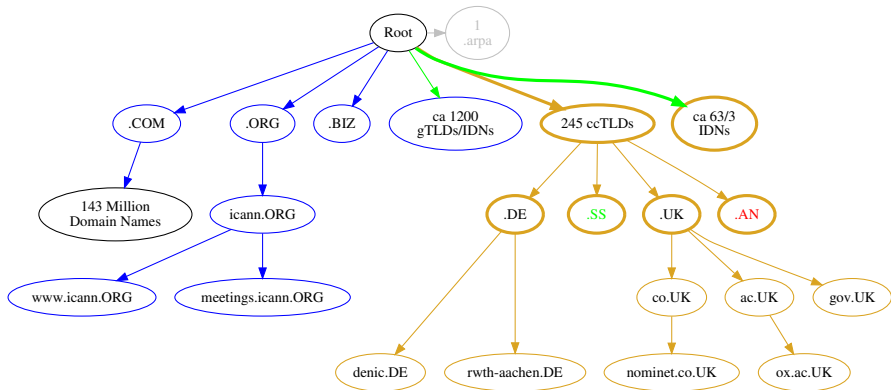
gTLDs



ccTLDs

- **country code Top Level Domains**
 - ccTLDs
- **Geography based**
 - Not as easy as one thinks...
- **Process (developed over time)**
 - RFC 1591
 - Framework of Interpretation
- **ccNSO**
 - Policy binding on members

ccTLDs



TERMINOLOGY

TERMINOLOGY IS IMPORTANT™

- Adding a ccTLD to the Root
 - Delegation
 - Process
- Change of ccTLD Manager
 - Transfer (Agreed)
 - Process
 - Revocation & Delegation
 - Substantial Misconduct
 - Process?
- Removal of a ccTLD from the Root
 - Retirement
 - This PDP

TERMINOLOGY IS IMPORTANT™

- ccTLD Manager
 - Should reside in-country
 - Obvious Reasons
 - Entity (or Individual)
- Admin(istrative) Contact
 - Must reside in-country
 - Historic Reasons (RFC 1591)
 - Individual or Role Account

ISO

ISO

- International Organization for Standardization
- List of Country **Names** obtained from the UN
 - Country **Name**
 - *“Name of a country, dependency, or other area of particular geopolitical interest”*
- ISO 3166-1 (International Standard)
 - *“Codes for the representation of **names** of countries and their subdivisions”*
- Country Code
 - *“List of country **names** with their representations by **code elements**”*
 - Alpha-2
 - Alpha-3
 - Numeric
- Currently under way
 - ISO/DIS 3166-1 (*Draft International Standard*)

ALPHA-2 CODE ELEMENTS

- AA-ZZ
- Or rather
 - AB - QL, RA - WZ, & YA - ZY[©]
 - Upper case
- **Within ISO 3166-1**
 - Country Names
 - 245 corresponding ccTLDs
 - No ccTLDs
 - .BL, .BQ, .EH, .MF, and .UM
- **Outside of ISO 3166-1**
 - Exceptionally Reserved (currently 12)
 - Current ccTLDs
 - .AC, .UK, .EU and .SU

RETIREMENT

EXTERNAL EVENT EXAMPLES

- Country Changes Name
 - Timor - East Timor (TP - TL)
- Country Seizes to Exist
 - Unification
 - Germany (DE - DD)
 - Country Splits Up
 - Netherlands Antilles (AN - CW, SX, BQ)
 - Exceptionally Reserved (SU)
- Independence (Split Off)
 - Southern Sudan (SS)
 - Sudan (SD)

RETIREMENT SCENARIOS

- One-to-One Name Change
 - **.TL** added to the Root
 - **.TP** retired
- Retirement Proper
 - **.CW** added to the Root
 - **.SX** added to the Root
 - **.AN** retired
 - **.BQ** not added to the Root
- Exceptionally Reserved
 - **.SU** remained in the Root

ISO *TRIGGER EVENTS*

- ccTLD is eligible
 - ISO Alpha-2 Code Element assigned
 - In rare (exceptional) cases
- ccTLD **will** be retired
 - ISO Alpha-2 Code Element removed
 - In rare cases

RETIREMENT (POLICY) STEPS

- *ISO Trigger Event*
- Decision to Retire ccTLD (IFO/ICANN?)
 - ccTLD Manager informed (IFO)
- Retirement Plan
 - drafted (ccTLD Manager)
 - agreed (ccTLD Manager - IFO)
 - implemented (ccTLD Manager)
- ccTLD Removal from Root
 - Removal Date (IFO)
 - Final Approval (ICANN)

RETIREMENT PLAN

- Not Mandatory
 - Unless time extension requested
- Agreed Between
 - ccTLD Manager
 - IFO
- Communications Plan?
- ...

RETIREMENT MILESTONES

- ccTLD stops accepting
 - Registrations
 - Renewals
 - Transfers

exceeding the Removal Date

- ccTLD Manager turns off Register
 - Registrar Access
 - DNS Updates

COMPLICATIONS

OUT OF SCOPE

- Decision to Retire
- Removal from Root
- ccNSO Membership
 - Or lack thereof
- Registrants
 - Purpose based Registrations
- Registrars
 - Business Model
- ...

UNEXPECTED CONSEQUENCES

- ccTLD Manager Change
 - **Transfer**
 - Significantly Interested Parties?
- ccTLD Manager Non-Functional
 - Revocation & Delegation?
 - *ccEBERO?*
 - Within of Scope of PDP?
- ccTLD Manager Uncooperative
 - Functional
 - Out of Scope of PDP

EXCEPTIONALLY RESERVED

- No Policy for Adding to Root
 - Board Guideline (EU/.EU)
- Move from Exceptionally Reserved to ISO
 - AC/.AC is the only current candidate
 - previously GG, JE, IM
 - .GG, .JE, .IM remained unchanged
- Exceptionally Reserved to Formerly Used
 - Retirement
 - Process Unclear
 - Probably Case-by-Case
 - Spirit of (this) Retirement Policy?
 - ...

IDN ccTLDs

- Internationalized Domain Names
 - Not in the ISO Standard
- Removed from ISO 3166-1
 - Probably trigger for IDN Retirement
- ISO Name Change
 - IDN (Name) Change?
 - Who decides?
- ccNSO PDP on IDN
 - Will deal with Trigger Event(s)

IDN HYPOTHETICAL

- Country Name Changes
 - Republic of **X**ubuntu
 - Federal Republic of **X**ubuntu
- ISO 3166-1 Standard
 - **XR** would be removed
 - **XF** would be added
- ccTLD
 - **.XR** would be retired
 - **.XF** would be added to the root
- IDN
 - What would happen to **.MAYAFUA?**

Questions?