ccTLD Best Practices & Considerations
ccTLD workshop, Guyana 2007

John Crain and Jacob Malthouse
Internet Corporation for Assigned Names and Numbers
ccTLD as a public trust

- ccTLDs are designated to operators who will operate them in the best interests of the local communities they serve.

- Operators should strive to tailor operations to best serve the users:
  - Ensure minimum technical standards are met
  - Strive for best practice
  - Operate with policy that suits local requirements
Things we’ll consider

- How a ccTLD operator can be structured
- Best Current Practices
- Interacting with ICANN
ccTLD Structures
Some options

- Government?
- Not for profit?
- Outsource?

- Most common:
  - Not for profit private organisation
  - Appropriate membership from the community
  - Chartered for limited scope
  - Some kind of liaison with the government
  - Often light regulatory oversight
Sales model

- Direct registration
  - No middle man - easier to control most aspects of registration

- Registry-registrar model
  - Requires an interface between registry and registrar
  - Offloads end-user interface from registry

- Both
Scope

- Local or Global sales?
- Decide what best serves local community
- For global, consider legal aspects
Best Practices
Preface

- These are some highlighted points from a few key documents on best practice

- It is not exhaustive

- There is a wealth of information on ccTLD Operations out there
  - Check meeting proceedings; regional organisation websites
RFC 2870 - Root Server Name Operational Requirements

- Document designed for Root Servers
- Still some valuable advice for TLD operators
  - root servers and TLD servers aren’t that different!
Server Considerations

- Must run servers that supports technical standards
- Must handle load 3x the measured peak
- Diverse bandwidth to support above
- Must answer authoritatively, and NOT be recursive
- Should “NOT” block access from a valid Internet host
- Should “NOT” support AXFR (zone transfer)
Security Considerations

- Physical security
  - Limited to a specific set of individuals
- Power continuity for 48 hours
- Fire detection and retardation
- Backups
- Don’t provide other services on the servers (mail, ftp, web etc.)
- Keep on a separate network segment from public hosts
- Log attempts at intrusion
- Set your reverse DNS
Communications

- Coordinate downtime between nameserver operators
- Coordinate backups between servers; keep backups off site
- Exchange logs and statistics between nameserver operators
- Nameserver operator personnel should be on call 24x7
Don’t place all on the same LAN/building/segment

Host offline doesn’t mean DNS doesn’t matter!

How many? 4 or 5 is probably good rule for TLDs, varies depending on circumstances

Note: There is roughly a hard limit of 13 (related to 512 bytes), and of course there should be more than 1!
ccTLD Best Current Practice Draft

- A document in progress for a number of years
- Tries to describe some of the common practices of ccTLDs
Human Resources

› Administrative Point of Contact
  › Responsible for making clear rules for domain policy and operation.
  › Should represent the local Internet community and ensure ccTLD run for benefit of country and its citizens.

› Technical Point of Contact
  › Maintains the zone and makes sure systems run

› Programmers and Technical Staff
  › DNS experts, UNIX administrators should be in the team

› Finance and Billing
  › If you are charge fees...

› Lawyers
  › A reality if you trade globally
Structuring the TLD

- Flat or hierarchical?
  - Flat - simpler, equal access
  - Hierarchical - more domains, less disputes
  - Difficult to change later
- Two (.co.xy) or Three (.com.xy) TLDs?
  - Matter of preference, really
- Distributed distribution?
  - Delegating sub domains to other parties
  - More complicated administration for small registries
Technical Requirements for Registry

- Secondary Servers
- Networks (redundant)
- Physical and Electronic Security
- Quality of Service (24/7 availability!)
- DNS software (BIND, NSD, etc.)
- Registry software
- Diagnostic tools (ping, traceroute, zonecheck, dig)
- Registry Registrar Protocol
Other considerations

- Dispute Resolution
  - Local law prevails
  - Alternate Dispute Resolution (ADR) designed to be more lightweight
    - UDRP is often used as a model
      - [http://www.icann.org/udrp/udrp.htm](http://www.icann.org/udrp/udrp.htm)
Other considerations

- Regional organisations
  - APTLD (www.aptld.org) - Your local group
  - CENTR (www.centr.org)
  - LACTLD (www.lactld.org)
  - AfTLD (www.aftld.org)

- Country Code Network Operators Group
  - www.ccnog.org
Interacting with ICANN
ICANN

- Interesting ICANN parts for ccTLDs:
  - ccNSO
  - Accountability Frameworks
  - ICANN Meetings
  - Liaisons
ccNSO

- Country Code Name Supporting Organisation
- The mechanism for ccTLDs to participate in ICANN’s policy processes
  - Reviews on documents that govern ccTLDs will occur here
- Any ccTLD can join. No cost involved.
  - [http://ccnso.icann.org/](http://ccnso.icann.org/)
Accountability Frameworks

- Simple lightweight agreement on the services each will provide
  - Reflects the key elements of mutual concern identified by the ccNSO
  - Mutual recognition and commitments by both parties
  - Covers dispute resolution and termination
  - Termination clause
- Does not affect rights, or the service ICANN will provide
- Can be tailored to local requirements or circumstances
Why sign?

- Formalises relationship between ICANN and ccNSO
- Provides clarity on what to expect
- Shows commitment to a community-based coordination of the global interoperable Internet
If you are interested...

- ICANN staff responsible for these can speak to you about what it involves and what your needs are.
- We can link you with the appropriate people.
ICANN Meetings

- The main policy forums for DNS governance
- Held 3 times a year, rotating between 5 regions
- Free to come to and participate in
- Often has side meetings (i.e. regional meetings)
- Next meetings: March 26-30 - Lisbon, Portugal
- July 25-29 - San Juan, Puerto Rico
Liaisons

- IANA Liaison
  - Kim Davies <kim.davies@icann.org>

- Regional Liaison
  - Jacob Malthouse <jacob.malthouse@icann.org>
  - Update us with what you’re doing. Keep your IANA details up to date!
More information
Sources for information

- RFC 1591 - ccTLD governance
- RFC 2870 - Root Server BCP
- Accountability Frameworks
  - http://ccnso.icann.org/announcements/announcement-06jan06.html
- ccTLD Best Current Practice Draft
  - Currently a draft under development, comments welcome to the authors.
Thank you for your attention!

John Crain  
john.crain@icann.org

Jacob Malthouse  
jacob.malthouse@icann.org