Building Out Your Registry

Advanced ccTLD Workshop

September 2008
Amsterdam, Netherlands

Topics

Topics for this week were chosen based on the feedback we received. Details are available here:

http://ws.edu.isoc.org/cgi-bin/wiki/pub/advanced-cctld.pl/Responses

Topics cont.

The top requested topics were:

1) EPP
2) DNSSEC
3) Network Monitoring
4) Building out Your Registry
5) Registry Tools

Putting this in Context

- As your registry grows complexity advances. There are several key items involved:
  - Possibility of multiple registrars (epp)
  - Need to use robust back-end stores like databases.
  - Policy requirements (who can register what), dispute resolution, etc.
  - Security – such as DNSSEC and as it relates to availability.
  - Customer services, such as IDN, Help Desk, dispute resolution.

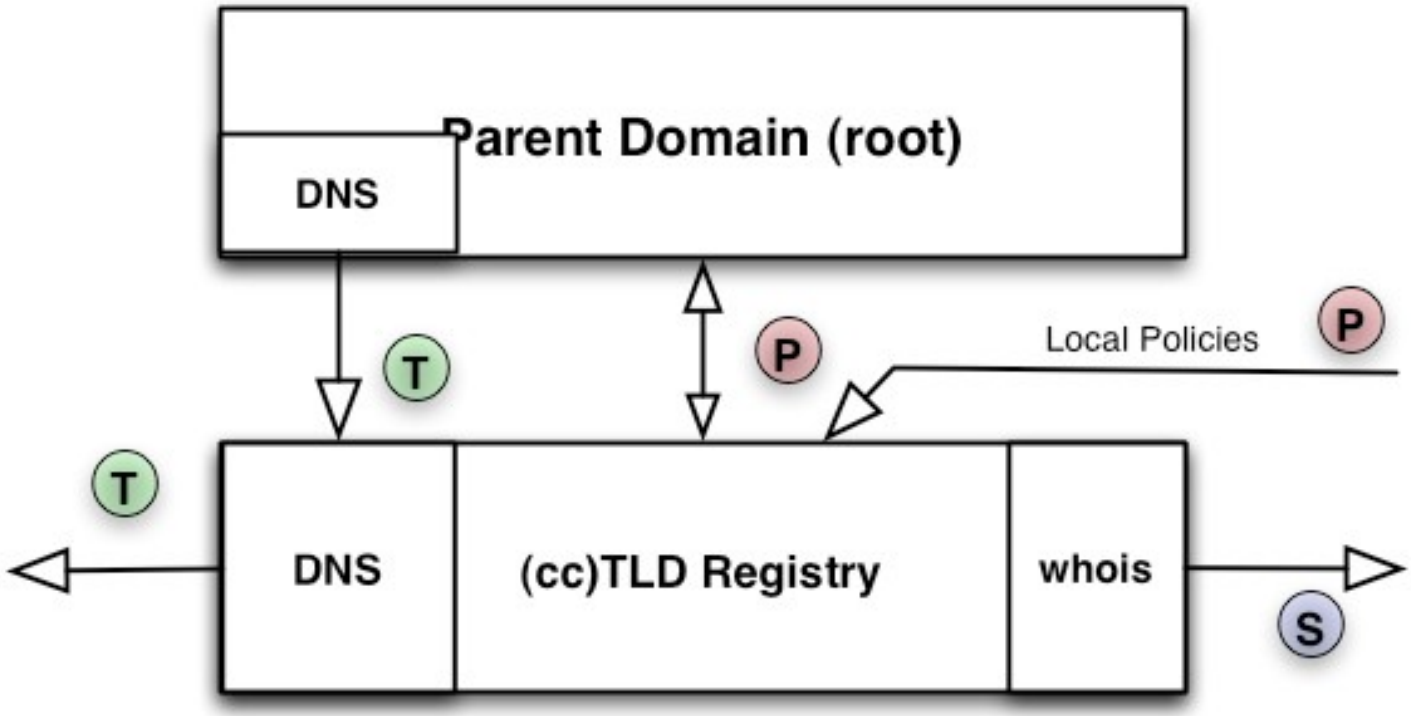
Or, Another Possibility

- You could outsource your registry services:
- Some issues:
  - Loss of local skill set to run the country TLD.
  - What happens if the external group goes away?
  - Does this work if your government uses your TLD?
  - Still need a contingency plan to host the zone and recover customer billing data. This is non-trivial.

Review

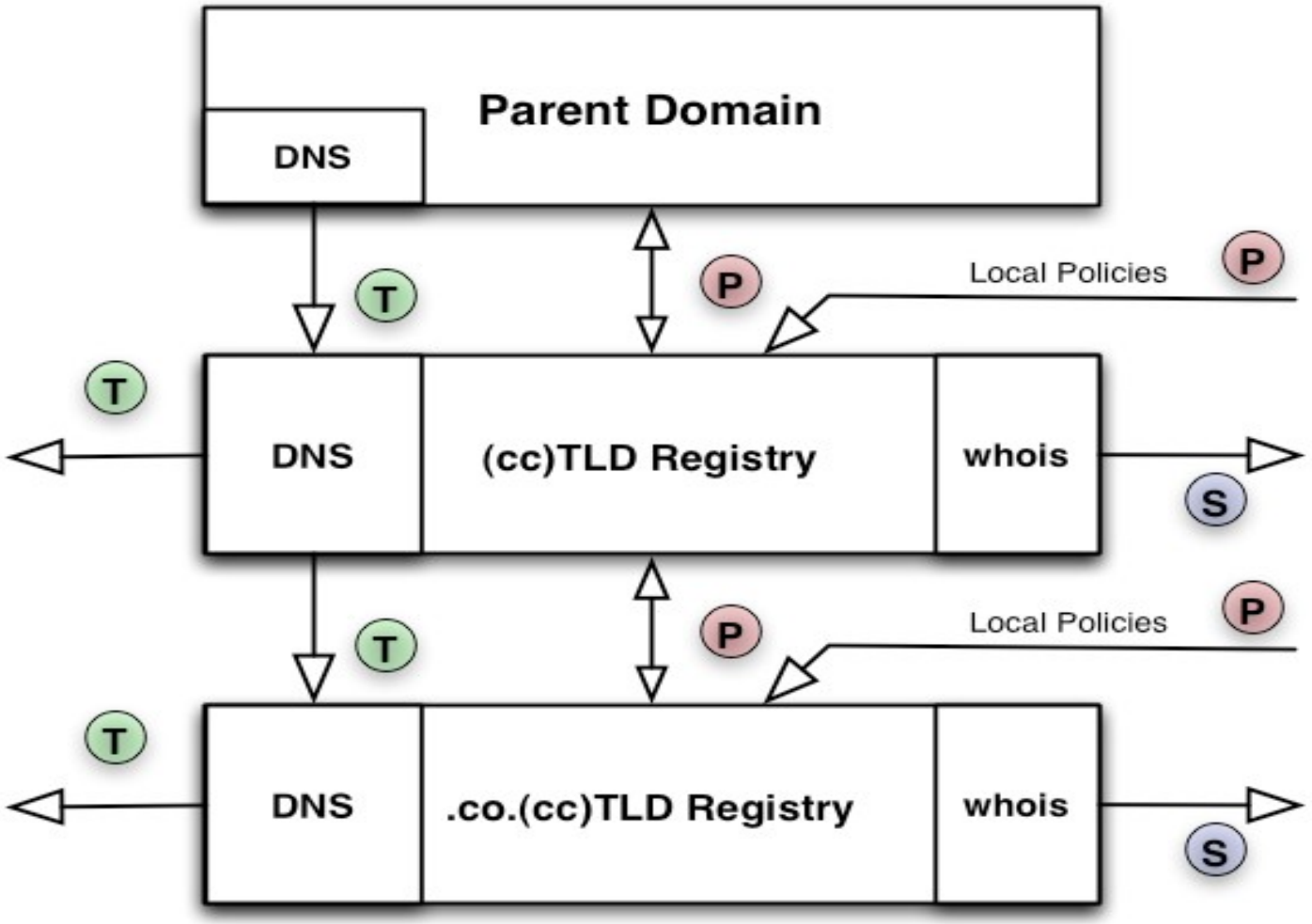
- We'll discuss some sample views of registry models.
- We'll break down the final view in to its component parts:
  - DNS
  - Hardware
  - Registry Data Store
  - Whois service
  - Registration process

Functions of a Registry

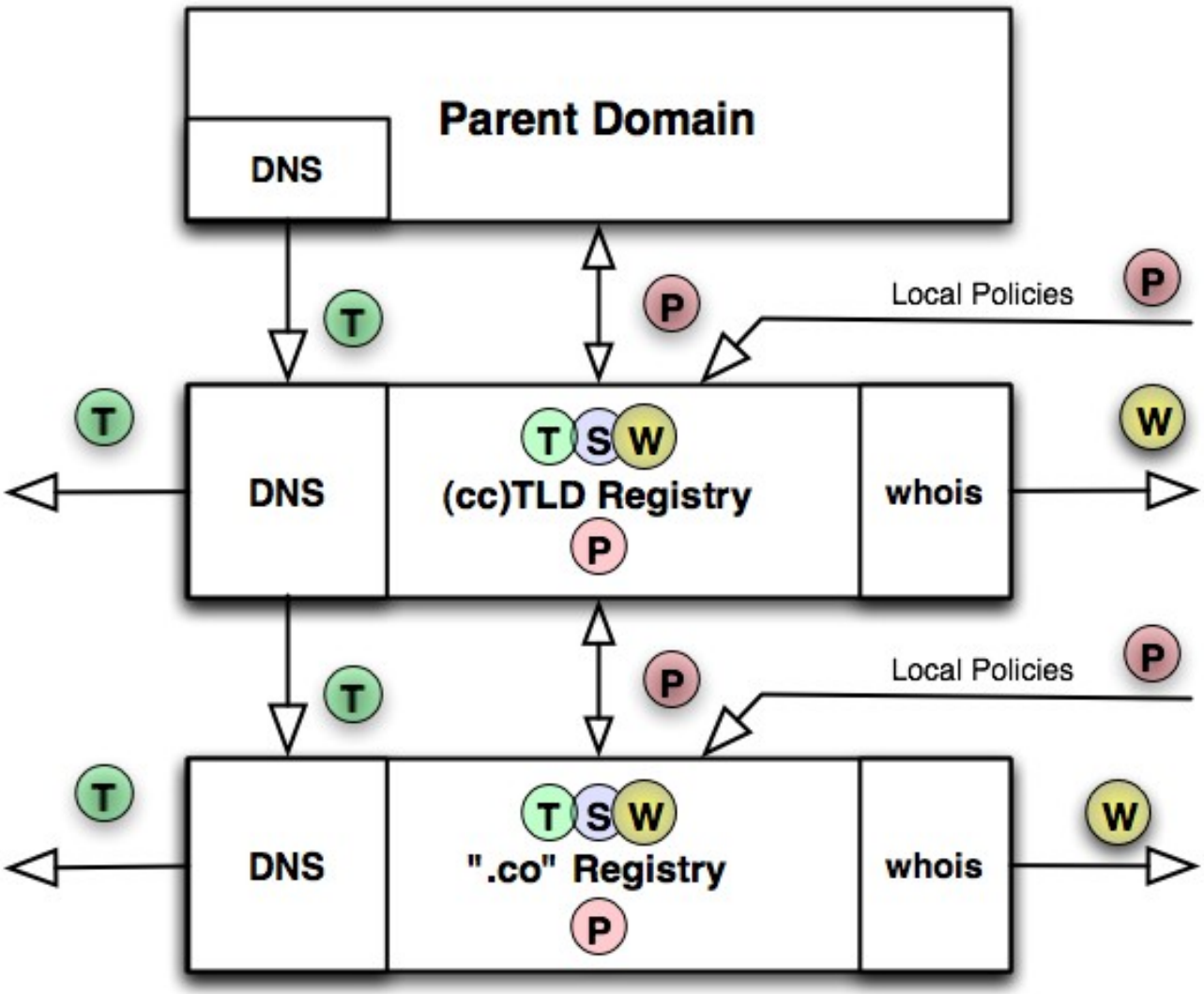


T = technical data (zone content)
P = policy data (local community policies, IANA policies)
S = social data (contact info, billing data etc.)

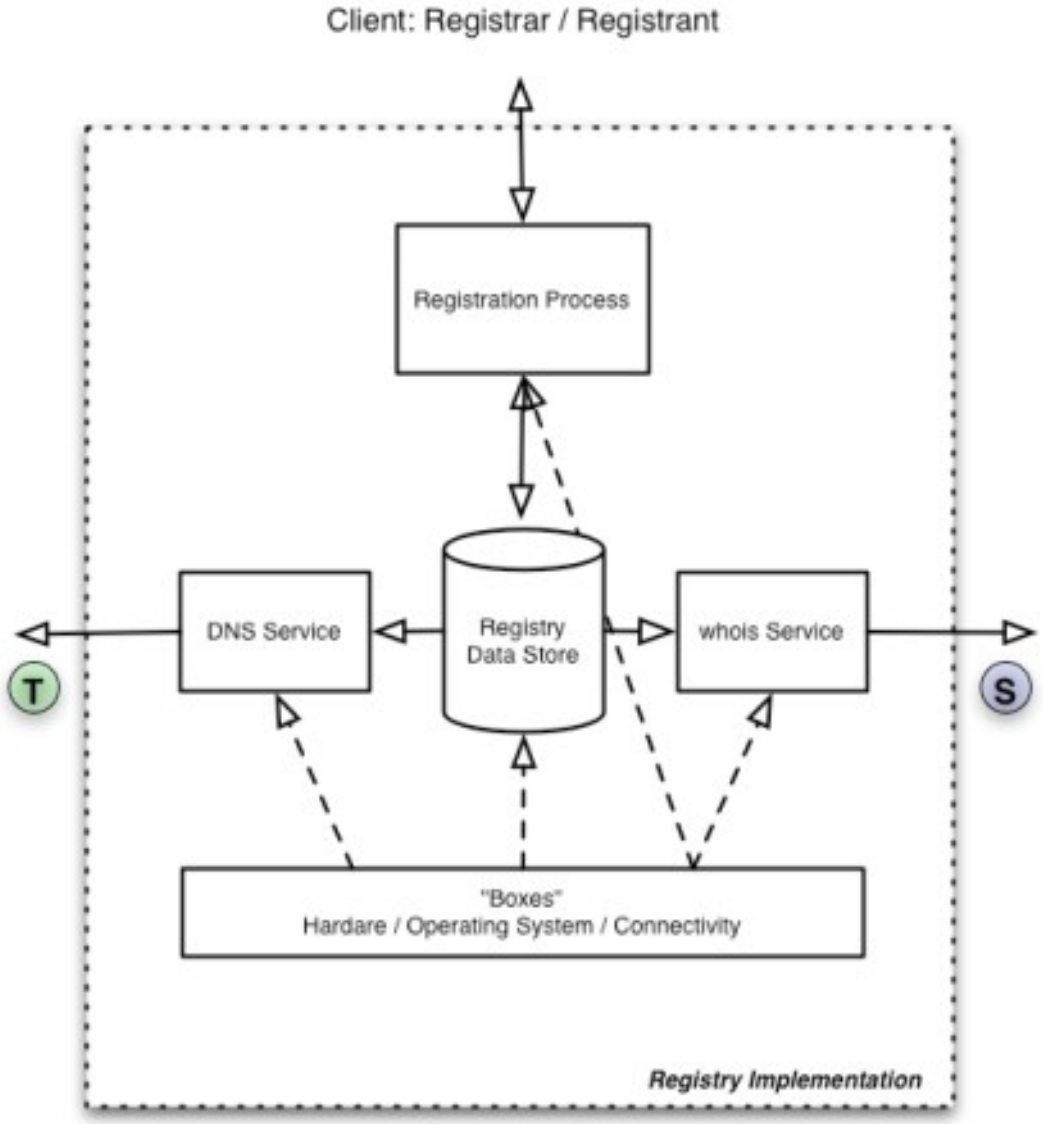
Second Level Domains



Variation on the Model



Functions inside a Registry



The Component Parts

- DNS Service
- Hardware
- Data Store
- Whois Services
- Registration Process

DNS: Publication

- Tools related to this include:
  - DNS Servers such as BIND, NSD, PowerDNS
  - AXFR
  - rsync
  - database syncing
  - ?? Other

DNS: Quality Control

- Is it secure?
  - DNSSEC
- Zone file testing:
  - Use of scripts:
    - PERL NET::DNS
    - sed/awk
    - etc.

DNS: Monitoring

- What do you monitor?
  - System level
  - Name server
  - Name service
  - Network

DNS: Monitoring cont.

- System monitoring
  - SNMP
  - NAGIOS
  - Syslog
  - MRTG/RRDTool

DNS: Monitoring cont.

- Name Server monitoring
  - Smokeping with DNS module
  - MRTG
  - Syslog with scripts (swatch, syslog-ng, etc.)
  - Network use (wireshark, tcpdump)
  - Name server checkers to verify correctness (next slide)...

DNS: Monitoring cont.

DNS Name Server Checkers

- Lots of bad ones on the net
  - build in policies
    - some policies utterly silly
- Decent ones
  - dnscheck.se
  - zonecheck.fr
    - highly tunable

DNS: Monitoring cont.

- The Name Service
  - dnsmon from RIPE NCC
  - DSC
  - Others?

Boxes: Your Hardware

We do some hand-waving here...

- As you grow your OS choices become very important.
- The hardware you use is important.
- The network and all it's physical components becomes more complex.

This is another course...

Registry Data Store

- This will likely grow and become complex.
- Depending on your choice of implementation what you use may differ.
- You may need more staff to manage your data store than the DNS.

Registry Data Store

- Internal data store may include things like:
  - Registry data
  - ticket system data
  - billing information
  - public information (whois)
- How you access this with what components will drive your design.

Whois Service

- Public/external data store
  - Classic: port 43
  - Via web interface
  - New: Crisp
- Implementation of local privacy rules
- Public social data
- Internationalization (i18n) will have an affect.

Registration Process

- Primary function
  - interface to the client (registrar, registrant)
- Secondary function
  - Enforcement of local policies and regulations, e.g.
    - name valid and unique
    - registration number (if required by government etc.)
  - Billing information

  Methods: Web services, email client, EPP, Fax, phone etc.

Registration Process cont.

- Use of EPP or similar tools
  - Name server delegation checker. Either prepackaged or locally written using:
    - PERL
    - Ruby
    - Python, etc.
- Customer billing

Registration Process cont.

Help Desk – Resolution of Conflicts

- Consider issues such as:
  - Delegation problems
    - Particularly when delegation checks are done.
  - Conflicts about names
    - UDRP in-house or outsourced
    - Protests about registration rules
  - Technical problems
    - Complaints about DNS, etc.

Registration Process cont.

Delegation Audits

- Lame delegations
- Key expiry detection for DNSSEC

What We'll Cover this Week

- Operating System
  - We'll be using FreeBSD
- Registration Tools
  - We'll cover what registry tools are available
- Registry build-out
  - EPP
- DNS Monitoring
  - DSC and dnsmon
- DNS Security
  - DNSSEC

What We'll Cover cont.

You should see how these topics:

- Registration tools
- EPP
- DSC and RIPE NCC netmon
- DNSSEC

Fit some of the key pieces involved with building out a registry.

Results

Good planning and implentation have led to:

- Reliable and available TLDs.
- Increased revenue, or reduction in costs.
- Ability to expand operations and size more easily.