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.
We'll discuss some sample views of registry models.

We'll break down the final view into 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 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 its 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 implementation have led to:

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