Registry functions and stability

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Some background about AFNIC

• AFNIC is the ccTLD manager of .fr (France), .re (Réunion Island), .tf, .pm, .wf, .yt.

• Not for profit organisation (Association loi 1901) founded in 1997 by the French State and INRIA

• Membership open to all stakeholders

• 43 employees, located in St Quentin en Yvelines (near Paris)

• Budget approx. 5.5 M€, more than 1 million domain names managed.
Categories of service provided

What services does a ccTLD manager provide?

1. Domain name resolution service
2. Registration services
3. Directory services
4. Traditional business services
Domain name resolution service

Answers requests for second level domains (ie afnic.fr) name server information (delegation).

- **Who are the users?**
  - Any user or application using domain names: Web and e-mail mostly, but most applications communicating over the Internet also request domain name resolution.

- **Security needs:**
  - Availability and limited response time:
    - requests must be answered within very short timeframes (typically 95% requests answered in less than 100 ms),
    - from anywhere on the Internet
    - full-range availability, global coverage.
    - Volume: for .fr, several thousand queries/s is common for 1 server
  - Data must point to the correct resource and be comprehensive: incorrect, truncated or missing record will cause application to stop working
  - No specific confidentiality constraint… except for bulk access: zone file may provide sensitive information.
Registration services

Operations on the registry itself: create, delete, transfer, hold, update information, etc.

• Who are the users?
  – Mainly registrars, but some ccTLDs also provide services to end-users (companies, individuals, public authorities...)
  
  Volume, example of .fr: more than 30,000 requests «create» per month

• Security needs:
  – Authentication recommended, similar to any BtoB transaction.
  – Some operations are particularly sensitive: delete or transfer for instance
  – Some of the data provided during the operation may request a level of confidentiality (personal data or authentication data for instance)
  – Confidentiality of the transactions themselves may be requested.
  – Availability of service and delays vary among TLDs: from near-real time (hundreds of ms) and 24x7 to 5 days a week and several days for processing the request.
Provide information to the public related to domains: registrant, different kinds of contacts (administrative, technical), etc.

Usually known as **Whois**. Provided by most, but not all TLDs, information available as well as its display format vary.

- **Who are the users?**
  - Registrants, registrars, right holders, lawyers, law enforcement authorities.
Directory services (2)

- **Security needs:**
  - *Volume:* approx. 10-20 queries/s in the case of .fr
  - Whois information used in law cases and investigations: accuracy and integrity of data expected (within certain limits)
  - Real-time full-range availability - publicly accessible information (Web, port 43).
    - 100% availability is targeted although disruption does not affect the most widespread Internet applications.
  - Directory contains personal data: some information may remain confidential (in accordance with local regulations, such as Directive 95/46/CE in European Union)
  - Bulk access enables or facilitates advanced services such as trademark infringement alerts, reversed directory, but also spam etc. Mass access to data must be restricted.
Business services

Billing, customer support, information to the public…
Some ccTLDs also provide dispute resolution processes.

• **Who are the users?**
  – Registrars mainly but also registrants or even the public in some cases (depends on the ccTLD’s mission statement)

• **Security needs:**
  – Billing practices may protect more or less against trademark infringements (see domain tasting for instance…).
  – Emergency customer support may be needed (especially when registrations run 24x7)
  – Those services must not be ignored since many ccTLDs are businesses (even when not-for-profit organisation).
In a nutshell

• ccTLDs provide a range of services.
• Most of them have « business class » security needs
• The domain resolution service deserves special attention, since it is used by the most widely spread Internet applications.
• The Internet community (among whom ccTLD managers) has been dedicating significant resources to elaborating and sharing best practices to confront existing and emerging threats.
  - CENTR’s risk management resource
  - Examples of relevant RFCs: 2182, 2870, 1912, 2182, 2870, 3833, 4033
  - ...

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