

FRED – open source registry system

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Agenda

- History and overview •
- (Primary features (registration process and zone generation •
- (Low level features (notification, technical checks, invoicing •
- Configuration possibilities •
- Registry startup demonstration •

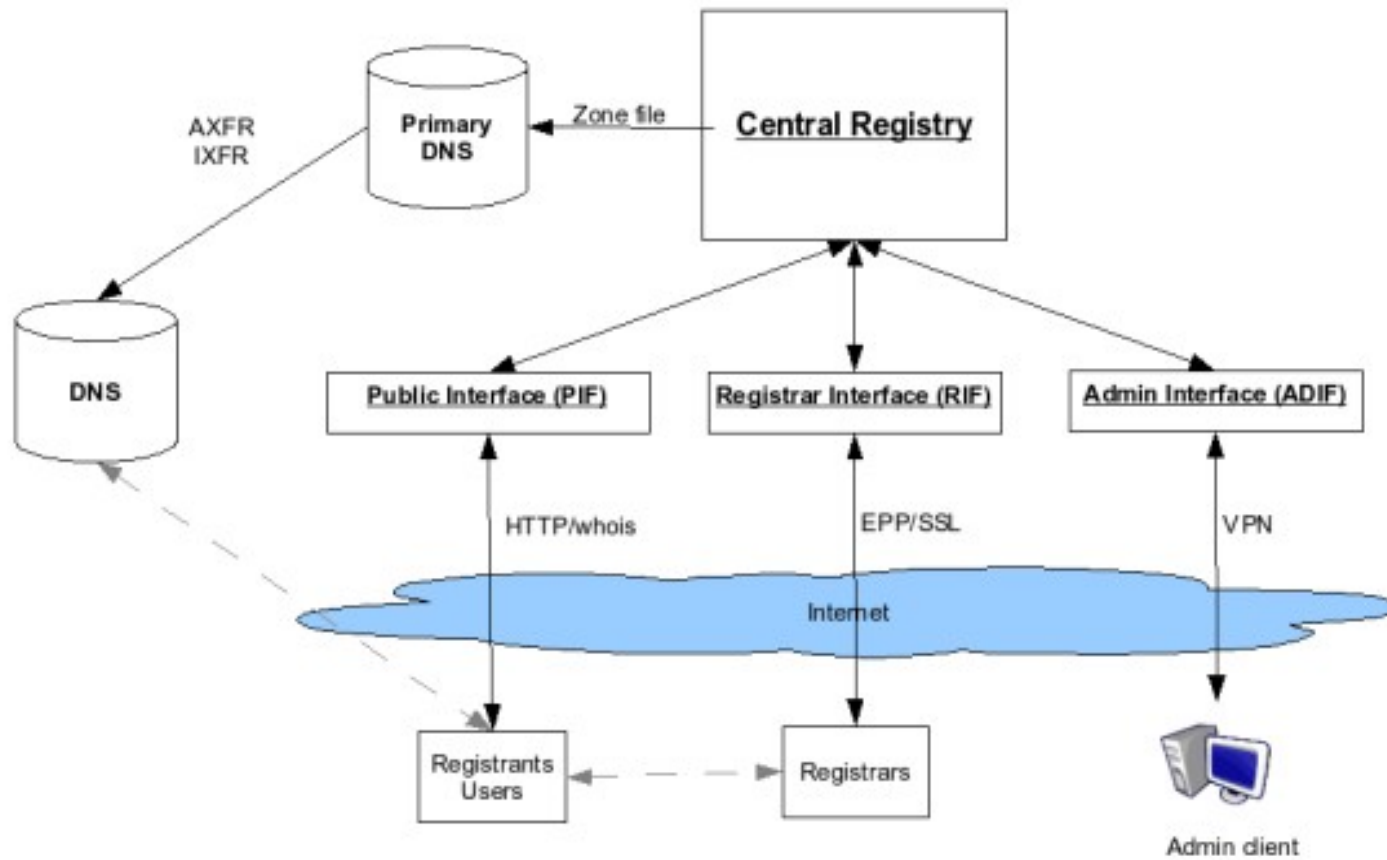
History

- outsourcing model – 2007 – 2003 •
- decision was made to bring system under our control – 2005 •
- software development – 2007 – 2006 •
- released as open source – 2007 •
- october 2007 – migration from old to new system .1 •
- Now – system is 6 month in production environment of .cz •
- Future – tweaking limits for registrars, more security for holders, DNSSEC, maybe IDN •

FRED overview

- Free Registry for ENUM and Domains
- Registry-Registrar model
- Evidence of domains, contacts and nameserver sets
- Zone file generation
- Email notification of contacts
- Prepaid invoicing system
- Technical checks of nameservers

System architecture



Registry – Registrar model

- No direct connection to domain holders
 - ...Except registry event notification, complains
 - Planned: blocking, data unification
- Signed agreement with each registrar
 - () Registration rules <http://dsdng.nic.cz>
 - No other restrictions
- Responsibility for checking identity of holders
- System registrar for own registry manipulation

EPP protocol

- The only way to send request into registry
- Slightly modified standard
 - Nameserver set is completely different
 - Few changes in contact detail
- Referential implementation of client in python
 - Command line and GUI version
- Notification of registrars
 - EPP messaging mechanism

Public interface

Two forms – web based, classical unix whois •

Common features •

(Lookup into all objects (domain, contact, nameserver set, registrars –

(Privacy concerns (disclose flags about details of contact –

Classical unix whois •

(...Reverse search (domains by holder –

Web whois •

Hypertext links between associated objects –

CAPTCHA –

Online list of registrars –

Forms to apply for some service from registry –

Administration interface

- Web based and command line versions
- Mainly for making queries into database
- :Few update features
 - Registrar creation
- Processing of public requests created through web interface
 - High priority in current development
- Command line tools support regular processes
 - Invoicing, banking
 - Regular unregistration, notification
 - Zone generation

Objects in registry

Contact •

Name and contact information, some identification, disclose flags for –
,whois

Nameserver set •

List of nameserver hosts –

(Each host maintains list of IP addresses (IPv4 or Ipv6 –

Administrative contacts –

Domain •

Expiration date –

Domain holder –

Nameserver set –

Registrars and objects

- Same rules for domains, contacts and nameserver sets
- Creating registrar, updating registrar
- Designated registrar – only registrar to make changes
- (Transfer supported by shared secret (authinfo
 - Gain authinfo
 - Give it to new registrar
- New registrar send EPP transfer command authorized with authinfo
- Holder can ask registry for sending auth info
- Simplification by cross authorization (holder instead of (domain

Expiration and renew

- Expired domains are held for 30 days in zone
- Next 15 days domain still stays in register
- After that domain is unregistered and made available
- Renew is allows maximally 10 year registration
- Contacts and nssets are unregistered after 6 month of not using it
- Holders are notified about these changes
- All these numbers here are configurable

Zone configuration

- Multiple zones in one registry
- Contacts and Nameserver sets are shared
- Registrar access to registry is allowed per zone
- (Zones can overlap (.org.cz, .cz
- (...Zone data includes zonefile generation headers (SOA

Zonefile generation

- :Rules when domain is generated into zone
 - Must have nameserver set
 - Current date is before expiration date + 30 days
 - There are no requests to hold domain out of zone
- Process is inhibited by command line tools
- Change tests to protect against bugs
- Hidden master is restarted with generated zone file
- Secondary servers download new version

Object states

Domains, contacts and nameserver sets have list of states •

...For example: expirationWarning, expired, outzone –

Automatically set after structural changes or time conditions –

(..Manually requested (serverTransferProhibited, serverOutzoneManual –

They drive other modules •

Zone generation –

Contact notification –

EPP commands implementation –

Unregistration process –

Parameters can be configured •

Email notification

- Notification of EPP actions

- Optional on presence of notifyEmail in contact

- Notification about state changes of object

- Sent to email in contact on expiration, removal from zone and unregistration

- Before unregistration we sent them letter with warning

- Template system for email content

- Email archivation

- Undelivered emails handling

Technical checks

Checks of nameservers in registry •

- Nameservers are reachable –

- They run DNS –

- They contain domains delegated to them –

- Heterogenous systems –

- !They are only informative •

Periodical or manually requested •

- Results of periodical tests sent to email of nameserver admins –

- Results of requested tests sent to registrar over EPP messaging –

Invoicing

- Prepaid credit model
- Periodical scan for payments on our accounts
- Identification of registrar from payment data
- Advance invoice is generated with credit
- Each create and renew domain operation lower credit
 - According to price list, prices are per zone
 - If there is no enough credit, operation fail
 - If price list is empty no actions are taken
- Once a month we issue accounting invoice
 - List of operations in last month

Customization overview

- Manual at this time •
- Zone configuration •
 - Name, SOA headers, periods –
- Admin command line tools to generate templates –
- Email templates •
 - ClearSilver templating system –
- PDF documents •
 - ReportLab templating system –
- Object state change parameters •
- Configuration options of application •