

# A Technical Overview of .tel

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# Introduction

- Why .tel is different
- Architectural overview
  - Technical/business considerations
- DNS characteristics/challenges



# Why .tel is different

- Not just yet another (boring) registry-registrar type new TLD
  - Conventional delegation-only model though
- No user defined address records in .tel
  - ICANN made us do it...
- .tel delegations will primarily contain NAPTR records
  - It's about **contact** data, not content



# Architectural Overview

- Sponsoring Organisation System
  - Member database & guests
  - Developer web site
- Name Service Provider System
- Applications



# NAPTR Records - I

- Identify arbitrary communication end-points:
  - Phone numbers, email/SIP addresses, IM handles, URLs, SMS/MMS, etc., etc.
- Amazingly powerful and flexible
  - Order and preferences
  - Regexp matching and substitution
  - Can build data structures in DNS
- Essentially mini-programs



# NAPTR Records - 2

- Horribly, horribly ugly:
- `jim.tel. IN NAPTR 10 54 "U" "E2U+voice:sip" \`  
`"!^.*$!sip:jim@rfc1035.com!" .`
- A SIP address for yours truly
- Even experts get these wrong
- Can't ever put these in front of the public
- Try explaining this to your mother..
- Conventional zone file managers just won't do



# DNS Challenges in .tel - I

- Very different zone characteristics
- Conventional zone files are small and static
  - Handful of “usual” RRs that rarely change
- .tel zones should be big and frequently changing
  - Many tens (hundreds?) of NAPTRs
  - Potentially updated several times a day
    - Changes have to propagate **FAST**
    - Low TTLs to avoid stale data getting cached



# DNS Challenges in .tel - 2

- Usual server/zone provisioning models won't do
  - Typical push 1-2 times a day
  - .tel will need far more rapid propagation than that
    - Effectively updating in real-time
- Lots of zones to manage too
  - => Database-driven back ends
- Can't really do this with a DNS setup relying on text-based zone and config files



# DNS Challenges in .tel - 3

- Lookups in .tel have to be fast and reliable
  - If not, “.tel is bad..”
- All name servers in .tel will be accredited
  - Must meet Telnic requirements
    - No lame delegations or misconfigured servers
- All name servers live under `dns.nic.tel`
  - Should mean no more than two lookups to resolve anything



# DNS Features

- Privacy
  - Users must be able to protect their private contact details, but DNS is public
- Profiles
  - Switch published contact data:
    - “I’m on a plane/asleep/in a meeting/at home”
    - New NINFO RRtype to indicate this
- Keywords
  - Useful for search/directory services



# DNS Provisioning

- NSP system (Tel-hosting)
  - Published specs and SOAP API
  - Free open-source software implementation
  - Initially free hosting service from Telnic
- Registrars will probably run NSP systems (one day)
- Tel-hosting providers will be accredited too...
  - Support SOAP APIs, privacy & profile features, import/export, keyword insertion, undo, etc.



# NSP Overview

- Written in Java (J2EE)
  - Tomcat & Apache
  - Postgres as default back-end database
    - Would work with any reasonable RDBMS
- Partitions: multiple virtual instantiations
  - Could be one per registrar
  - Or one per reseller on a registrar's NSP
- Supports most sane DNS implementations
  - BIND (text or DLZ), PowerDNS, etc.
  - Also includes its own Java-based DNS server



# The Privacy Issue

- How can an email address or phone number go into the DNS and be unreadable by spammers and marketing scumbags but still be available to friends and family?
  - Encrypt them!
  - Use `x-crypto` NAPTR service type
  - See I-D `draft-timms-encrypt-naptr-01`
- Friending system analogous to social networking web sites



# How Friending Works - I

- Bob wants to get private contact data from Alice
- SO system generates RSA key pair for Bob
  - Public key component stored in the DNS as RKEY RRtype
    - Essentially identical to DNSKEY & KEY
  - Private key stored in PKCS#8 at SO system
    - SO system doesn't know Bob's private key
- Bob sends a “can I be your friend?” message to Alice saying where this public key lives



# How Friending Works - 2

- Alice accepts the request at her leisure
  - Alice's NSP gets Bob's public key from DNS
  - Alice's NSP encrypts contact data for Bob with his public key
  - Private contact data for Bob stored under *uniquestring.alice.tel*
- Friending acknowledgement from Alice tells Bob which domain name to use to retrieve the encrypted content she's just set up
  - Bob remembers this :-)



# What this means for `alice.tel`

- Alice may have tens of contacts
  - Phone/fax/mobile/work numbers, email & SIP addresses, IM handles, etc., etc.
- If she has tens of friends, she can publish different encrypted contacts for each of them
  - => Some hundreds of NAPTRs in `alice.tel`
- NSP can store encrypted NAPTRs in its database
  - No need to encrypt DNS data on the fly when Alice switches her profile



# What this means for NSP

- Users will want to publish same contact data to a group of individuals
- Granularity of NSP is one-to-one
- NSP has the concept of groups
  - Group can have arbitrary number of members
  - Same content published to entire group
  - Each group member has a discrete RSA public key and subdomain of `alice.tel`



# Applications

- Need to provide tools to promote usage:
  - Publish and lookup stuff in `.tel`
- Unhappy experiences with web browsers
  - Telnic-operated web proxy
- Free open-source software:
  - Plug-ins to do address book integration for Outlook, Windows Mobile & Blackberry
  - Proof of concept iPhone client



# Parked Applications

- MacOSX AddressBook plug-in
- Java client for Symbian mobile phones
- NTN wizard
- Likely to be thrown over the wall to developer  
web site: [dev.telnic.org](http://dev.telnic.org)



# `vip.tel`

- Free test of the `.tel` system
  - Get real-world experience of user behaviour and what functionality is liked/hated
  - Staged introduction of feature set
    - Applications, privacy, profiles
- Originally planned to go away when `.tel` launches
- Sign up by email: `vip@telnic.org`



# Launch Timetable

- **vip.tel** announced at Cairo ICANN meeting
  - Set to continue in some form after GA
- Sunrise started 15:00 GMT Dec 3rd 2008
- Landrush started 15:00 GMT Feb 3rd 2009
- GA begins 15:00 GMT March 24th 2009



**QUESTIONS?**