

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 - 1

- 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 - 1

- 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.



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 - 1

- 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



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



QUESTIONS

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