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Combined User and Carrier ENUM under e164.arpa

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Definitons

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- User: the entity who has the right-to-use in a number
  - Usually based on service contract:
  - Assignment logistics:
    - NRA->carrier->user (most common case)
    - NRA->user->carrier of choice (800, corporate networks)
- Carrier: A service provider authorized to issue E.164 numbers for the provisioning of PSTN service under the authority of a National Regulatory Authority (NRA).
  - Hint: provides a PSTN point-of-interconnect and call termination for said numbers
- Peering: The negotiation of reciprocal interconnection arrangements, settlement-free or otherwise, between operationally independent service providers.

(my) thinking so far:

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- User ENUM is the VoIP equivalent of a DNS Mail Exchange record – user opts in, receives calls on IP – all in public IP land
  - Unfortunately the business case isnt like Email – you dont opt in, you still receive calls – and pay for calls made
- Carriers have to go elsewhere – into some private tree – „ships in the night“
- If we were to provide a carrier-ENUM like service, we‘d have to run yet another e164.foo service

Option three: Carrier ENUM in the e164.arpa tree

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- Putting Carrier ENUM into the e164.arpa tree
- Idea pioneered by Penn Pfautz of AT&T with support from Cable Labs folks
- Not obvious – but makes a lot of sense
  - Based on context-dependent interpretation of non-terminal NAPTR records
  - Single-tree concept implies zone cohabitation: r/w by both user and carrier

Why the hell would carriers want to do this..

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- If I can avoid dealing with regulators by moving into a private tree, great!
- Great?
- Upside:
  - Easier to „control the club“ by choice and „peering policy“
  - Assure one-of-a-kind club: GSMA, Cable…
  - Screw the interconnect regime – as regulators are waking up to the concept of „VoIP interconnect regulation“
- Downside:
  - Lock-in to proprietary „ENUM“ solutions
  - Hard to re-bid service
  - Resolution rates limited to club members
- „we want an RFC number on the request for proposal“

Problems to address:

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- ENUM under e164.arpa currently means ‚User ENUM' (by opt-in) only.
- A carrier-of-record has no standard place to deposit, for instance, Point of Interconnect (POI) information.
  - VoIP peering BoF documented interest
  - IP interconnect info through „zone cohabitation" doesnt fly
  - Interconnect resolution currently pressed towards private trees
- Consequences:
  - Low per-tree resolution rates
    - As announced by, and limited to „tree club members"
    - Alternative is multi-tree resolution – does not scale well, aliasing problems
    - No predefined scheme for global interoperability (!)
  - Private tree solutions tend to lack WRT to standards – reducing operator choice long-term
  - Registry cost:
    - Repeated OPEX per registry (assuming different operators)
    - No synergy between Carrier and User ENUM operation
    - this might imply failure of User ENUM – especially in small countries
  - less pressure on regulators to get some form of ENUM going at all – slower footprint for User ENUM

Requirements for a solution (Haberler/Stastny flavour)

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- single DNS lookup to get to a NAPTR
- no shape change for User ENUM
- additional functionality/code only for carrier resolvers.
- work with closed and open number plans – avoid wildcards / enable DNSSEC
- no new NAPTRs just for resolution
- deployment in finite time
  - local decisions as far as possible
  - no revisiting of global agreements like the interim procedures
- *Address privacy concerns – disclosure of unlisted numbers, user identity*

proposal

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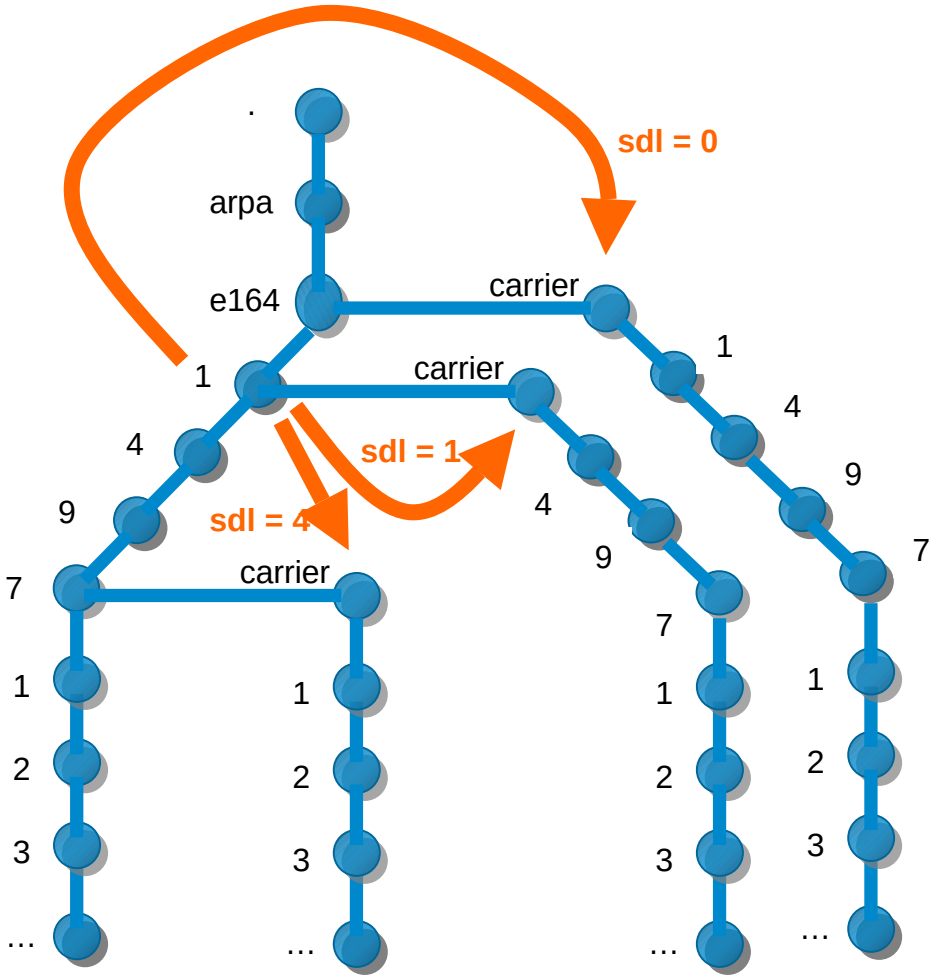
- add a Carrier ENUM subtree (branch) under e164.arpa
- Branch location is a per-CC decision
- Provide „autoconfigure“ mechanism to locate country CE subtree (branch location RR)
- Carriers may populate that subtree
  - What a „carrier“ is is a national matter
  - This suggest a branch under <cc>.e164.arpa
  - But also enable different scenarios like:
    - <cc>.carrier.e164.arpa or
    - Carrier.<NPA>.<cc>.e164.arpa
- Regarding resolution and management, Carrier and User ENUM tree should be „ships in the night“

Branching options: where?



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Roadmap for +43 carrier ENUM trial:

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- Will be based on Haberler/Stastny draft
  - People know it isnt final BUT potential change is localized – and resolution is the easy part anyway – encapsulate resolver I/F, abstract provisioning modules
  - Might require „switchover day“
- Requested the „nod off“ process by RTR – ETA this month
- CE resolver modules being written for Asterisk, SIP Express Router by enum.at staff (a.k.a. Otmar Lendl ;)
- „Interim peering practice“ to start – engage in VoIPeer IETF tarpit to shape consensus
- ETA trial start end of 2005
- Significant interest in US ENUM forum for interop trial

KISS: „Interim Peering practice“

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- Before we get into a djihad: IMV this is primarily about SPIT-free, DoS-free signaling
- Scaleable only between „border elements“
- Re-use the work in SIPForum on the „SIP Trunking“ UNI
- Boils down to sips (SIP in TLS)
  - Would like to use Digest authentication in TLS
  - Could mean that we‘re forced to use PKI/certificates
- Determine IC partners by evaluating target domain

IETF status

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- Convice Patrik about the inherent beauty of the haberler-draft ;-)
- WG recharter in progress to include CE in scope
- ENUM WG addresses only resolution
  - To finish before retirement/the VoIPeer folks have converged/whatever is earlier
  - „all open URI‘s“ unlikely/unworkable in CE
  - The tougher part – „national matter“ arrangements might impede global interoperability
- VoiPPeer: get consensus as to how the „interconnect agreement“ is mapped into Carrier ENUM semantics
  - „all open URI‘s“ unlikely in CE
  - The tougher part – „national matter“ arrangements might impede global interoperability

A word of caution:

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- Many folks „thinking about providing ENUM“ are IMV operating a bit off topic
  - This is about deployment, not R&D
  - It takes a year to understand where to find your customers nationally, and it is NOT your registrars (by and large)
  - Forget the per-country ops model: there is NO standalone business case in a small-country, User-ENUM only registry – suggesting cooperation or consolidation (!!)
- The Carrier/User split enables split operation – and bids
  - Even if that is totally stupid in business terms, and will kill User ENUM in small countries
  - Combined ENUM keeps User ENUM alive
- There is a major land grab going on for „Carrier ENUM solutions“
  - Presales for the consolidation has already begun

Remember:

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„The first to have 30 million numbers in wins“

Tom Kershaw, Verisign