TLD DNS Anycast Allocation Policy

was: Allocation Policy For Network Critical Infrastructure

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TLD DNS Anycast Allocation Policy

- Allow allocations of IPv4/24 out of the former class C range and IPv6/32 block for the operation of anycast DNS services if:
  - the anycast DNS serves a TLD zone
  - the number of nameservers would lead to a truncation of the authority/additional section in a DNS delegation response containing the NS RRset

Why wants DENIC to change the allocation policy?

DENIC Mission

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- provide fast/reliable DNS service for .de-zone
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-

Challenge: Quick Response for „everybody“

- As many servers in as many different places as possible
- a.nic.de, b.de.net ... k.nic.de
  - AT (1)
  - DE (4)
  - JP (1)
  - NL (1)
  - SE (1)
  - UK (1)
  - US (2)

Introduction of IPv6

- Study from NLnetLabs on RIPE 46 http://www.ripe.net/ripe/meetings/ripe-46/presentations/ripe46-dn-ipv6-glue/index.html
- Encourages IPv6 glues in root zone

but ...

Truncation does occur ...

- When more than 6 NS records with A and AAAA glue records exist
- Even if all NS are named a.nic.de, b.de.net etc...
- Even for the shortest query (i.e. NS for this TLD)

The anycast DNS solution

- Trade in NS records for an anycast server
  - keep network topological diversity
  - transparent to the end user
  - same service levels
  - does scale „easy“

but ...

Which address to use for anycast?

- DENIC has received 81.91.160.0/20 (Enterprise Registry)
- Current BGP filtering practices will make sure that a /24 announcement out of this block would be ignored
- Current RIPE address allocation policy does not allow to get a /24 with just 1-2 addresses in foreseeable use

Options

- Don‘t do IPv6 that much
- Reduce IPv4 glues
- Reduce total number of NS
- Allow IPv4/24 and IPv6/32 allocations to enable anycast for TLD DNS

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