.nz zone scan and Internet Data Portal

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Scanning the .nz namespace
Zone scan

- Started on Aug 2013
- Runs monthly
- Governed by policy https://nzrs.net.nz/dns(zone-and-web-scanning)
- Based on a fork from dnscheck https://github.com/NZRS/dnscheck
- DNS tests for configuration correctness + data gathering
Zone scan

- Notable examples
  Domain is broken, lame, has mail server
- Name server status
  Answers UDP, TCP, recursion, AXFR
- DNSSEC
  Signed domains, signed delegations, DNSKEY algorithms
- Web server, mail server, name server addresses
  Both v4 and v6
• TTL distributions
  NS RRset, MX RRset, “web” RRset
• Geolocation of services
  Name servers, Web servers, Mail servers
• Other
  Adoption of anycast
  Mail cloud providers market share
Results

What kind of data we have so far
• **Domain Errors**
  • Over 10% of active domains are broken (don’t resolve)
  • Lame delegations gradually reducing
  • Consistently 2% of domains don’t have an MX record
- Open recursion and Open zone transfer reducing (slowly)
- Support for NSID increasing (RFC 5001)
  - `dig soa nz @ns2.dns.net.nz +nsid`
- No UDP - really?
- No TCP
- Signed domains
  - DNSKEY and signed data present in the zone
- DS records
  - Observable at the parent
  - Requires support from registrar
- Signed domains grow faster than secure delegations

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**Cloudflare effect**

**DNSSEC adoption status**
• Flat
• Organic growth
• Except...
  • One registrar adding v6 addresses for their nameservers
Redundancy and Anycast

- If all nameservers are in the same AS
  - Lack of redundancy
- Except
  - If you use anycast
- Lots of domains with little redundancy
  - But not due to use of anycast
Mail market share

- Cloud providers
  - Mail services provided by the registrar
  - Mail services by known cloud providers
  - The rise of Office 365
Internet Data Portal
Making Internet Data openly available
Internet Data Portal

- [http://idp.nz](http://idp.nz)
- Cloud solution provided by Socrata
- Our efforts to support Internet research and share data openly
- Two datasets at the moment
  - .nz zone scan
  - .nz registration data
- Aggregated and anonimized
IDP - Examples

- .nz Zone Scan Data Set
  https://idp.nz/Domain-Names/-nz-Zone-Scan/ep35-2s5u

- Zone scan visual explorer
  https://idp.nz/view/d8mm-tt52
Zone scan subsets

- Domain Errors
  https://idp.nz/Domain-Names/-nz-Zone-Scan-Domain-Errors/2cqk-jxpt

- Nameserver Errors
  https://idp.nz/Domain-Names/-nz-Zone-Scan-Nameserver-Errors/g8c6-rp3v

- DNSSEC
  https://idp.nz/Domain-Names/-nz-Zone-Scan-DNSSEC/jd96-epec

- IPv6

- TTL distributions
  https://idp.nz/Domain-Names/-nz-Zone-Scan-TTL-Sample-/98tk-cy6d
IDP – Future

• More datasets
  Aggregated from .nz DNS traffic
  Thanks SIDN for the inspiration
  String analysis of the registry
  Levenshtein
  Portfolios
  Word segmentation and tagging

• More stories with pretty visualizations
  http://blog.nzrs.net.nz/visualizing-server-locations-for-nz-using-open-data/
  http://blog.nzrs.net.nz/two-years-of-nz-zone-scans/
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