NZRS
an InternetNZ company

.nz zone scan and Internet Data Portal

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APTLD Auckland 2016

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

Zone scan

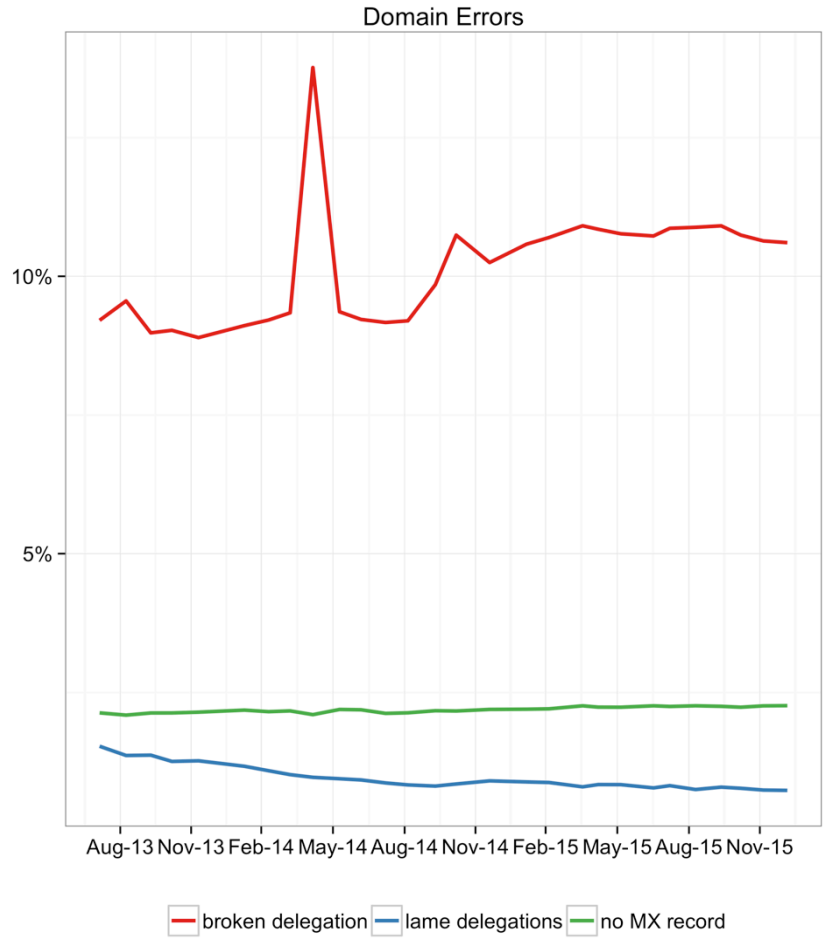
- TTL distributions
  NS RRset, MX RRset, “web” RRset
- Geolocation of services
  Name servers, Web servers, Mail servers
- Other
  Adoption of anycast
  Mail cloud providers market share

Results

What kind of data we have so far

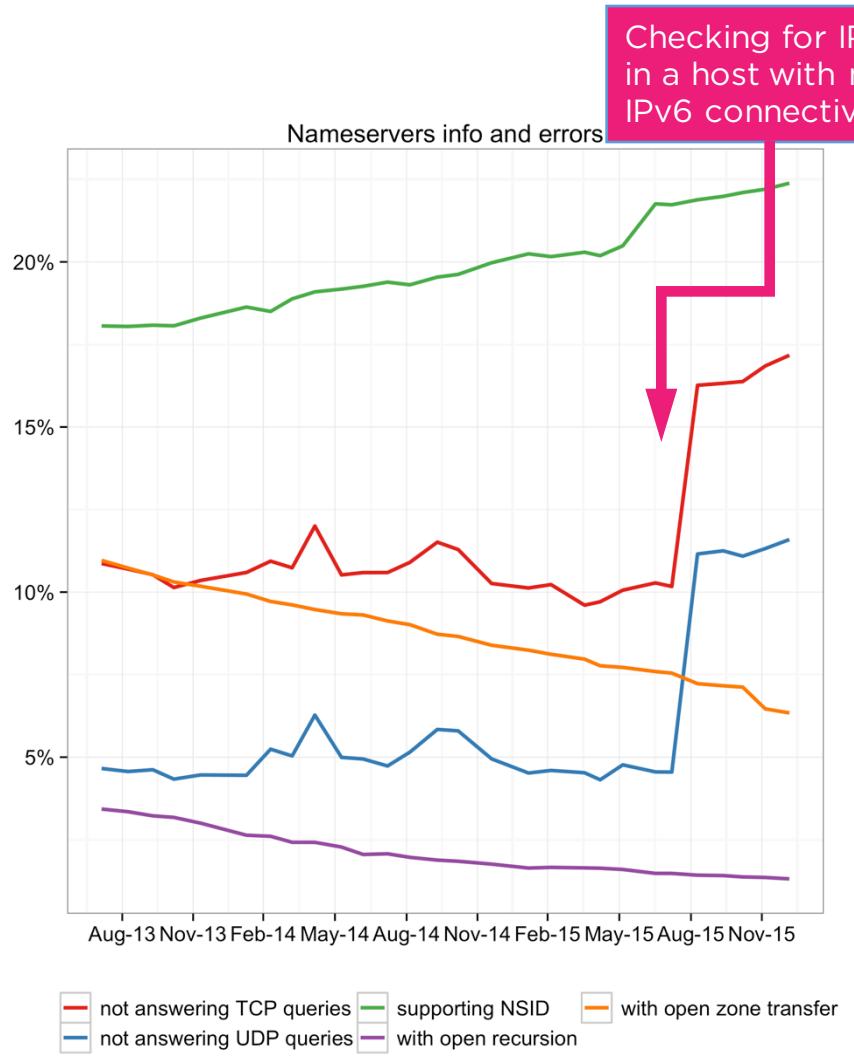
Domains

- 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



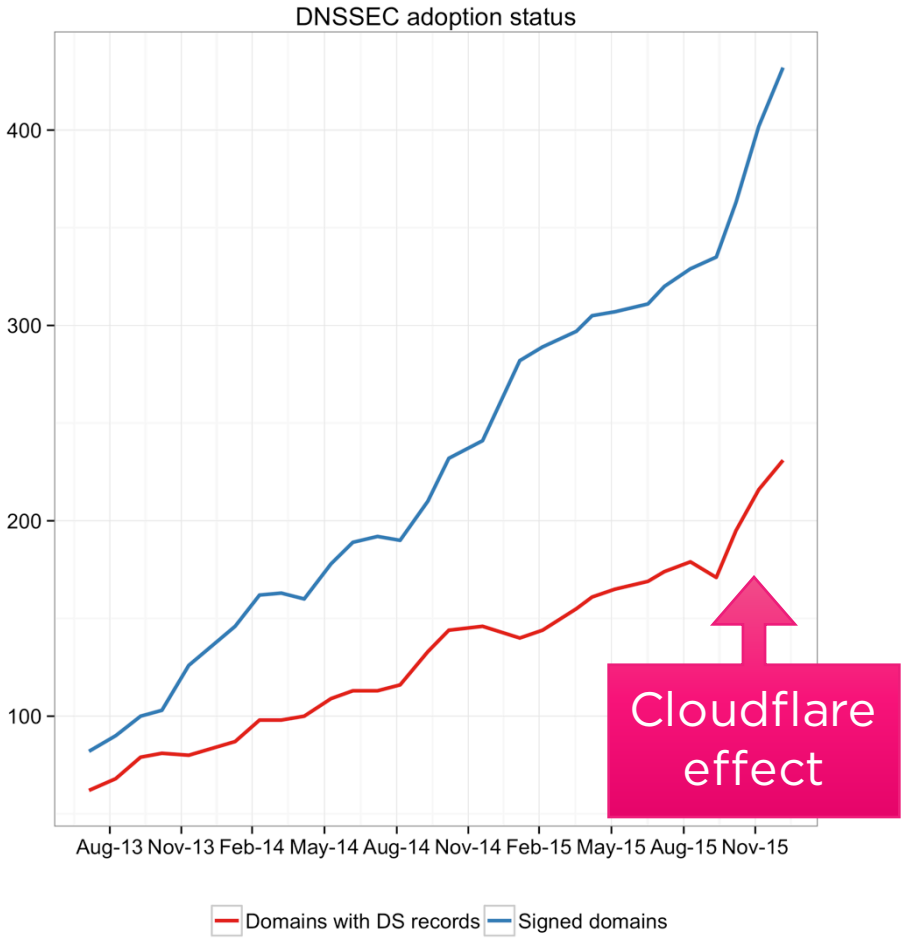
Nameservers

- 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



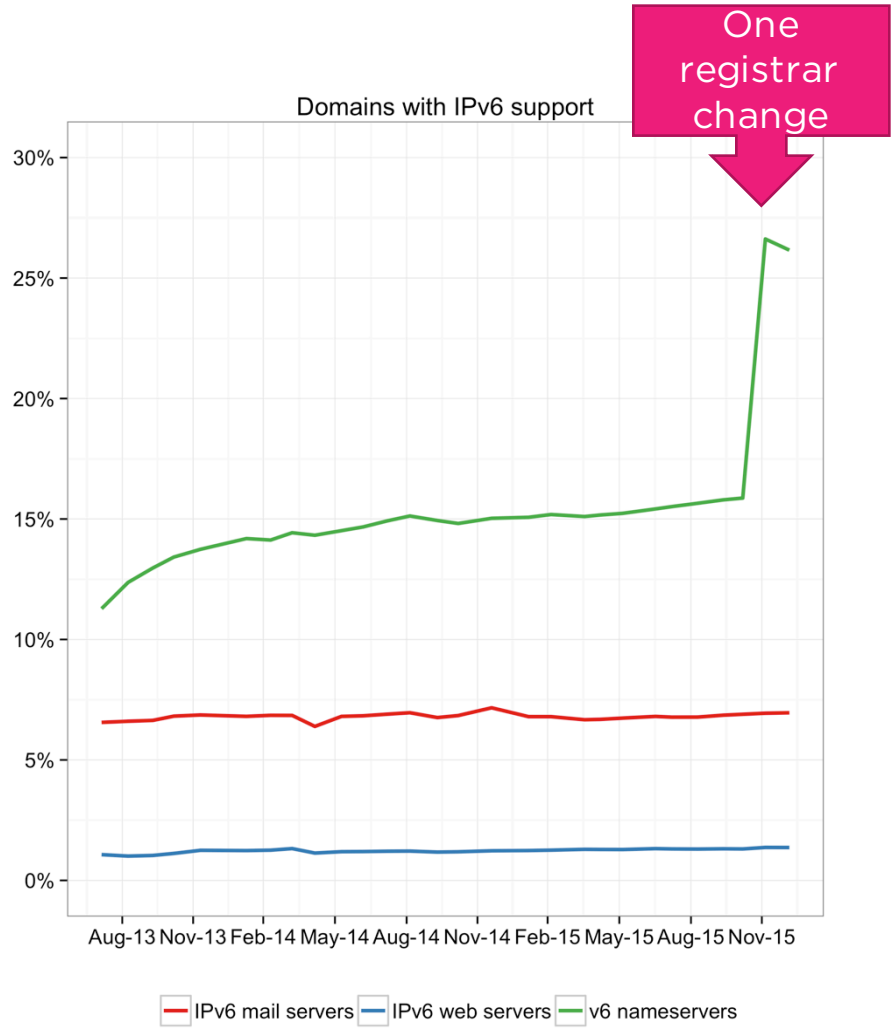
DNSSEC

- Signed domains
  - DNSKEY and signed data present in the zone
- DS records
  - Observable at the parent
  - Requires support from registrar
- Signed domains grow faster that secure delegations



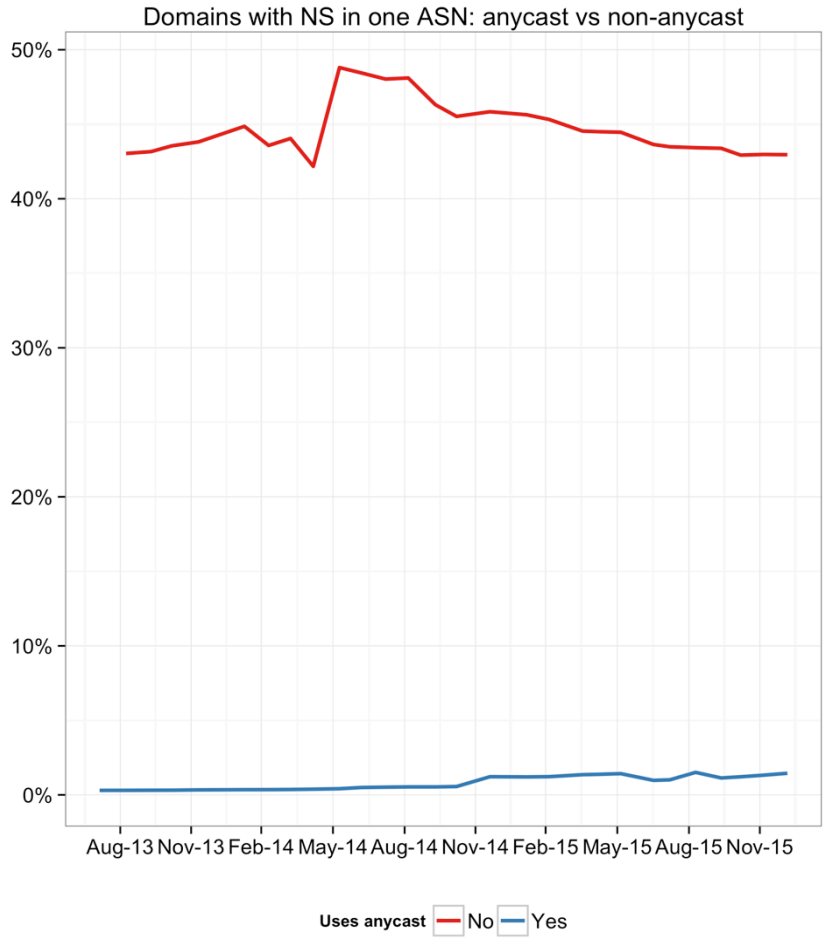
IPv6

- Flat
- Organic growth
- Except…
  - One registrar adding v6 addresses for their nameservers



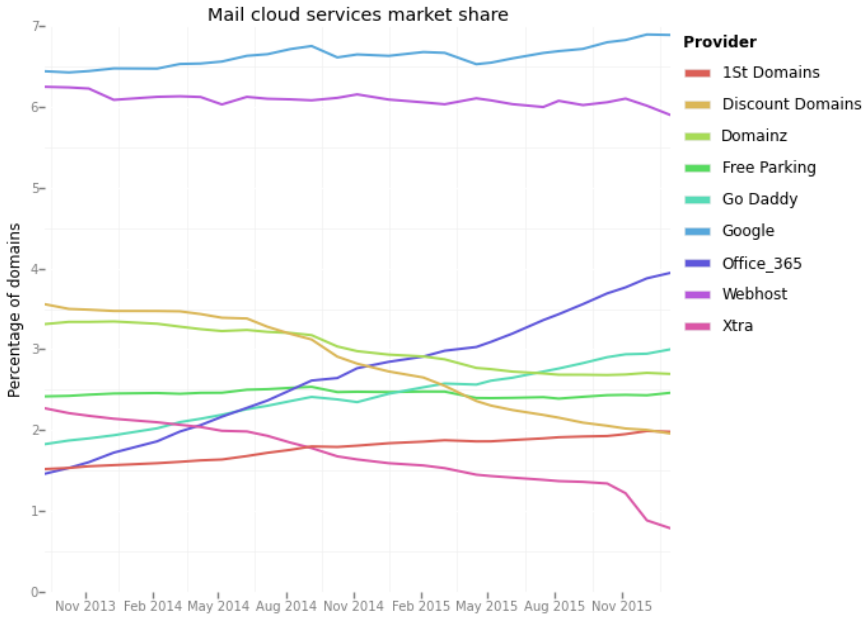
Redundancy and Anycast

- 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
- 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
  https://idp.nz/Domain-Names/-nz-Zone-Scan-IPv6/rypa-4eiq
- 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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