

The hunger for AAAA

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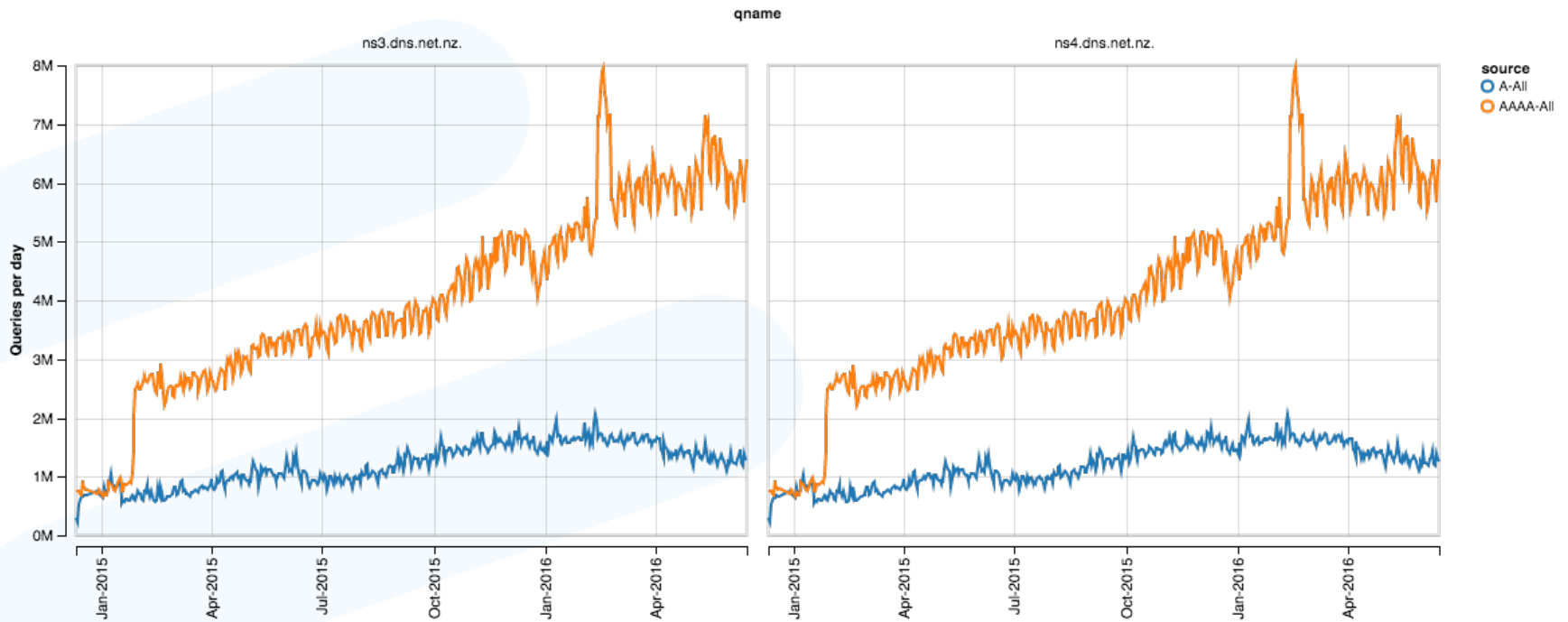
It all started with

- Offshore provider's bill was 20% higher than the previous month
When you get billed by the query, it hurts.
- Started checking for anomalies in the traffic
Using their snapshots and our own data
- Common pattern
Large amount of AAAA queries for ns3.dns.net.nz and ns4.dns.net.nz

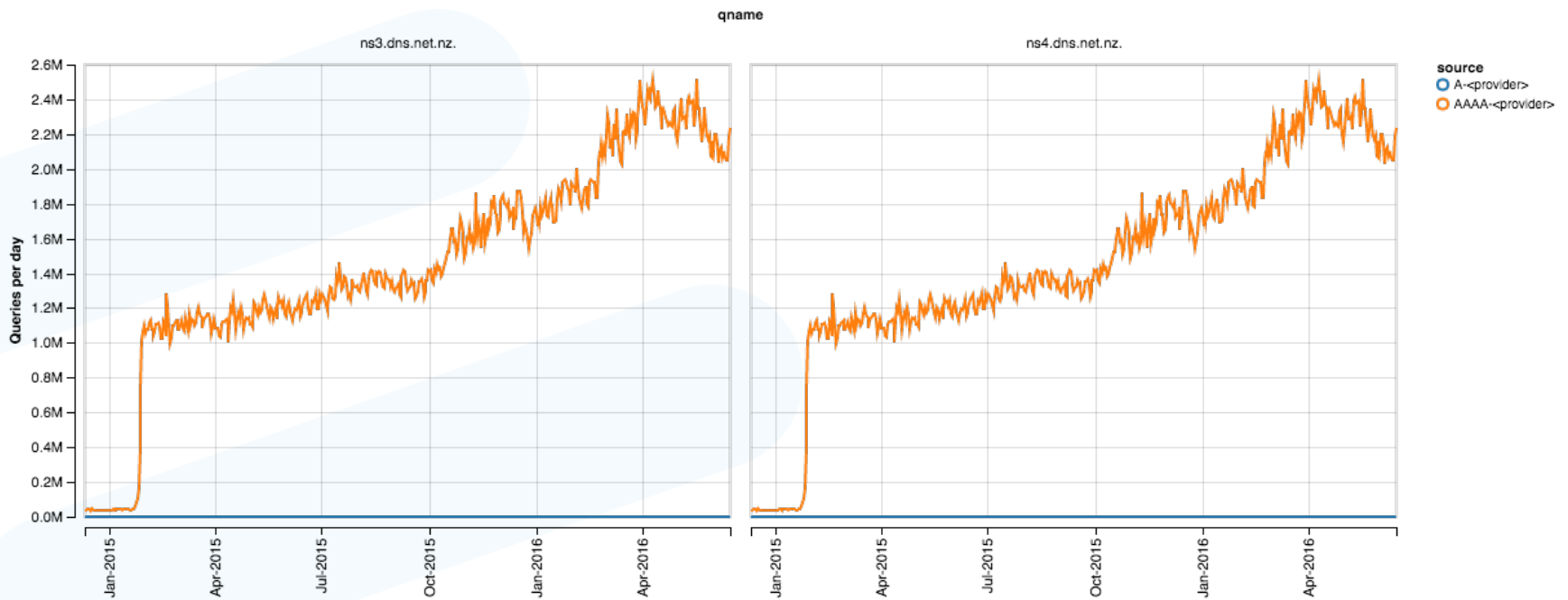
.nz delegation

- 7 nameservers
- 4 managed by NZRS and with instances in New Zealand
- 2 managed by one provider
- 1 managed by another provider
- Only ns3 and ns4 didn't have AAAA glue in the root zone

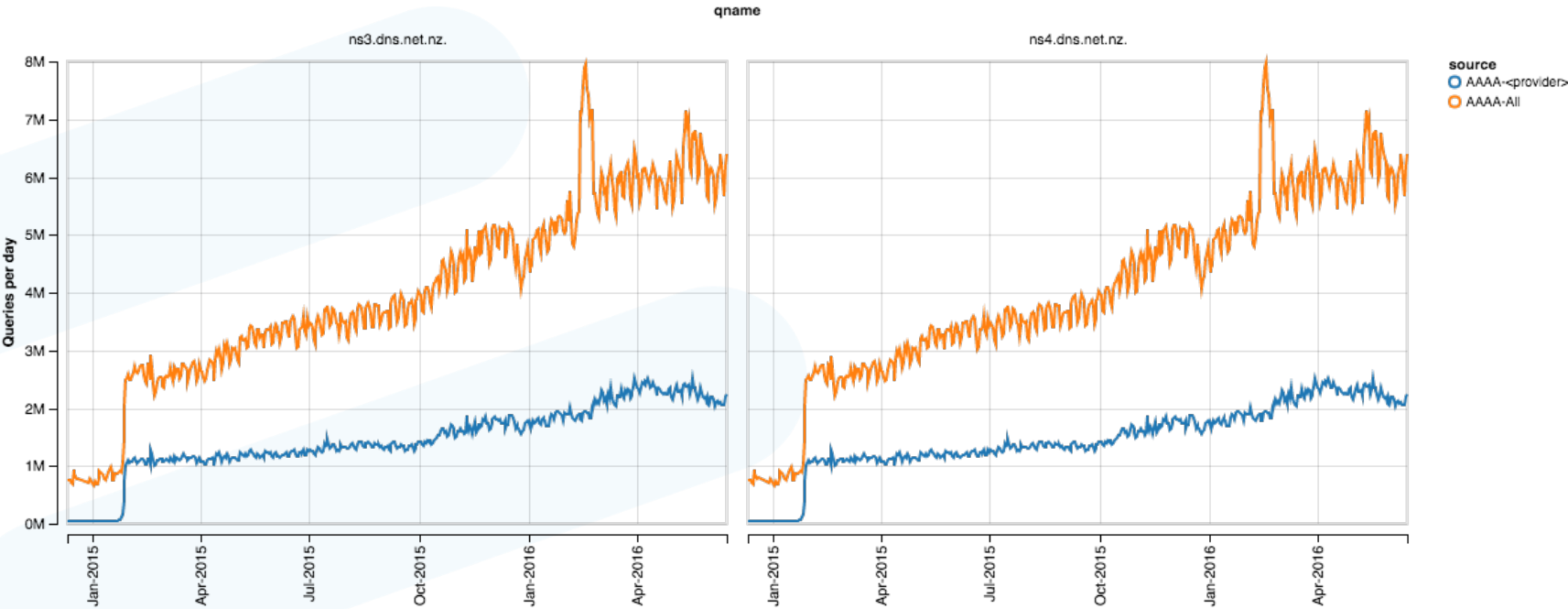
How bad it was?



From one specific ASN



Combined



How to fix it

- Option 1

Please <provider>, can you check why you suddenly started sending us million of queries and fix it?

- Option 2

Add AAAA glue for the two nameservers

Not an easy fix, getting proper IPv6 connectivity in New Zealand is not that easy

Deployment of fixes

- Option 1

Dear NZRS, we will take a look and see what we can do -- <provider>

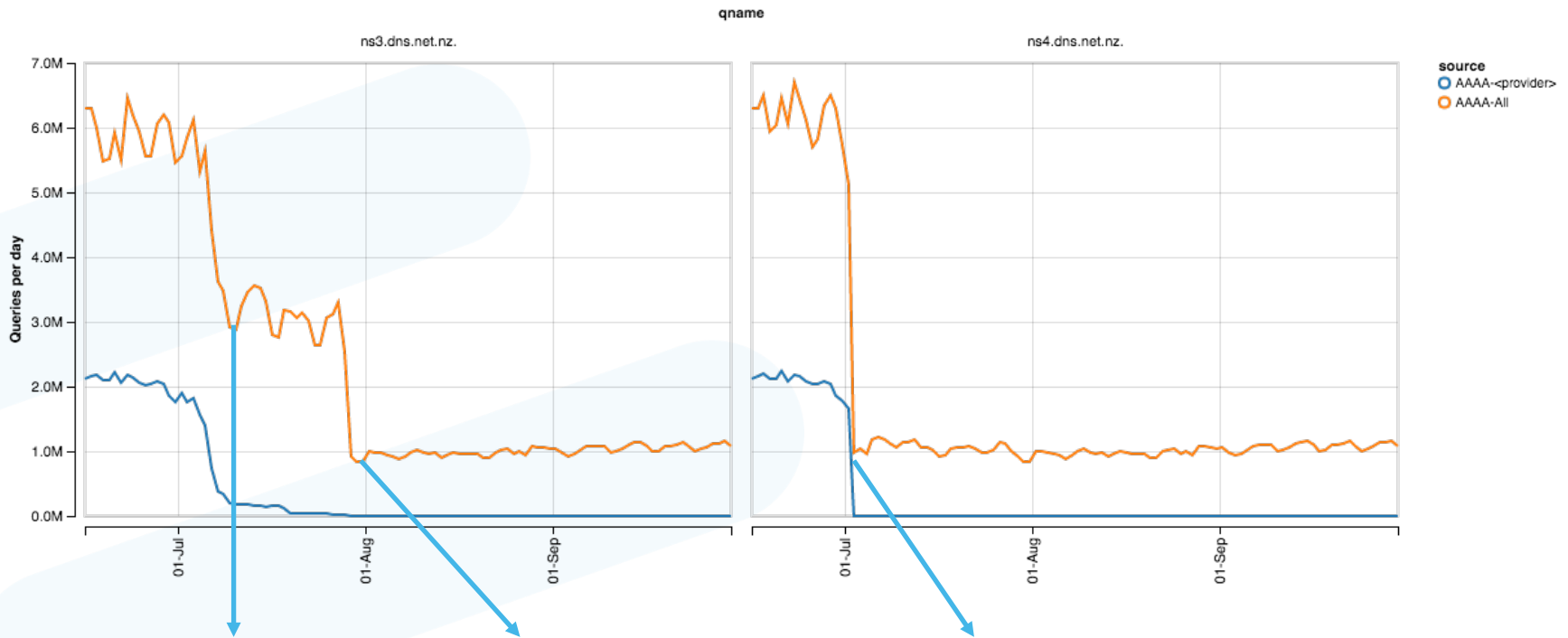
- Option 2

Use the v6 address of an existing nameserver as glue for ns3 and ns4 – temporarily

Speed up undergoing work to have real IPv6 connectivity

- Kudos to Daniel Griggs and Dane Foster for making it possible

Combined solution



July 7th:
<provider> fix
starts to get
deployed

July 29th: ns3
glue added to
the root

July 1st: ns4 glue
added to the
root

Others affected?

- Based on a copy of the root zone
- There are 532 authoritative nameservers for TLDs without AAAA glue
- Covering 330 different TLDs
- It should be possible to verify if they are seeing large amount of traffic from eager sources

Open Questions

- What the heck happened in Feb 2015?
- Happy eyeballs?
- OS update preferring AAAA over A
And not handling the empty response properly?
Negative TTL for .nz is 3600 seconds

Lessons learned

- Don't shoot yourself in the foot
- Pay attention to anomalies
- Keeping traffic counts helps a lot in forensics

Our Big Data platform made possible to go back in time

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