Query Storm affecting .CL

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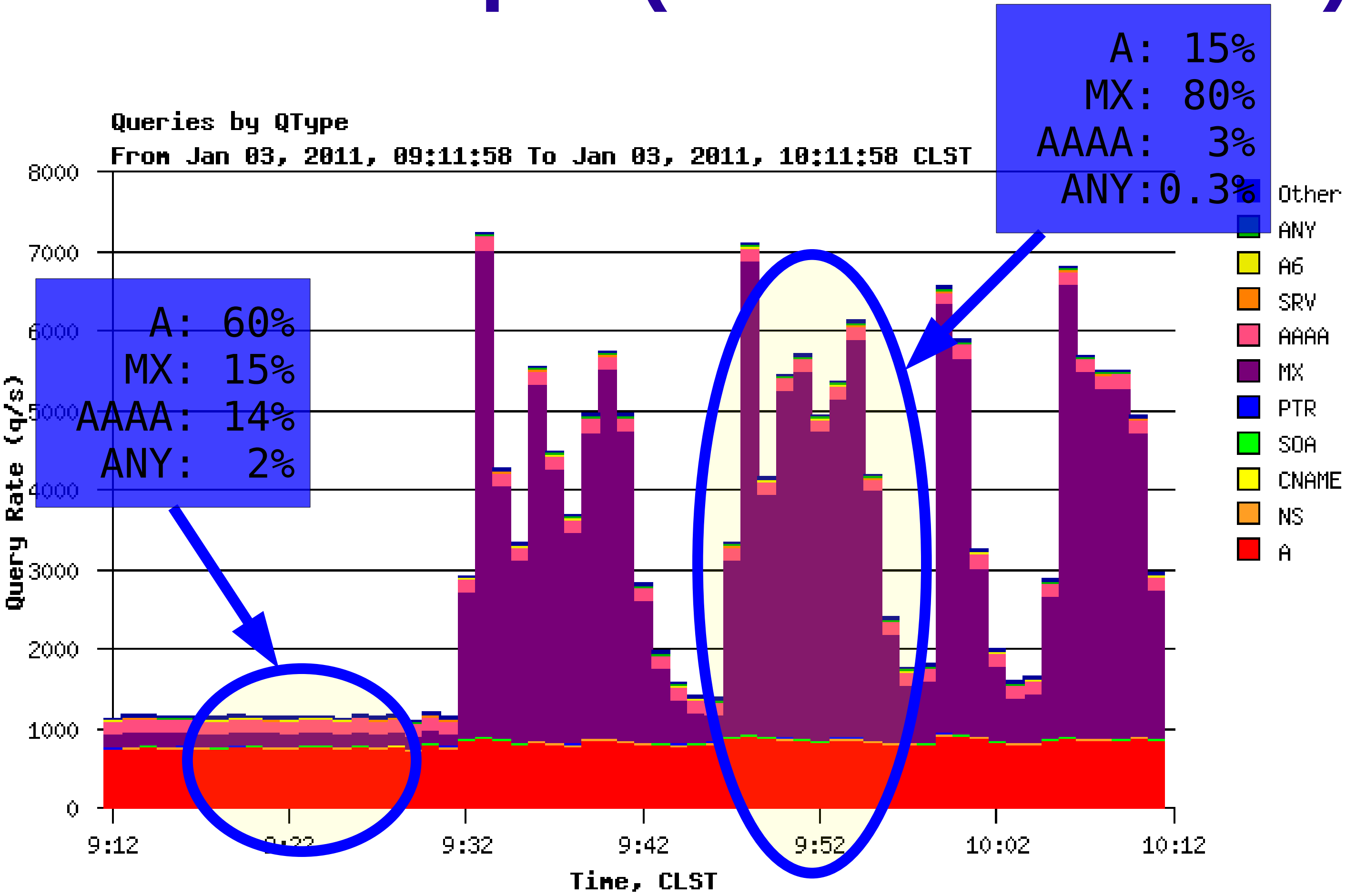
The phenomenon seen

- Since the beginning of 2011, we've received lots of unusual traffic in our servers.
- Most of the “extra” queries follows a common pattern:
  - Ask for the MX type
  - Bit RD turned on
  - Almost every query is a NXDOMAIN
  - Transaction ID starting with 0x0 (lower than 256)

A little example (first week seen)

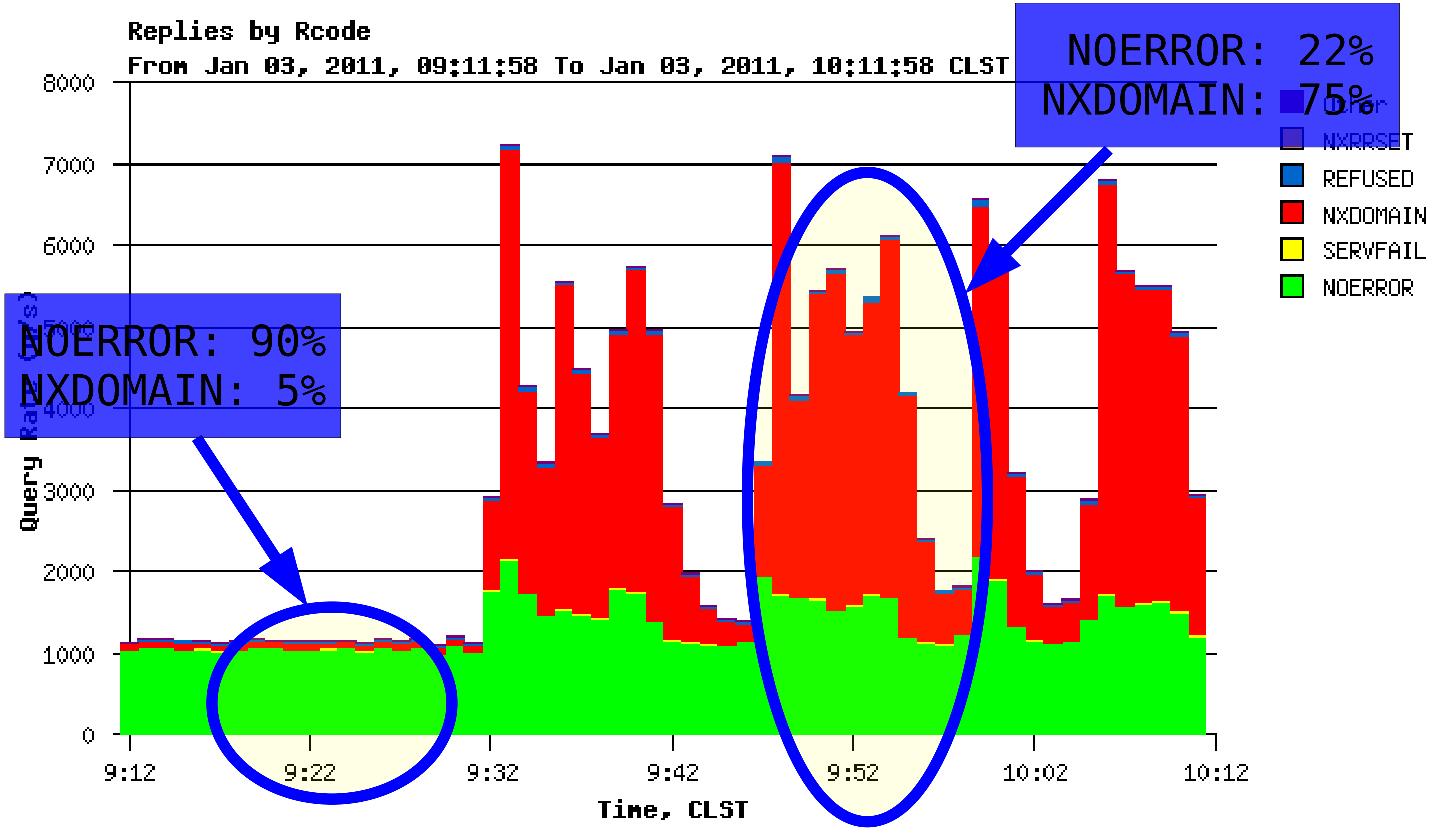
Query Storm Affecting .CL



A: 60%
MX: 15%
AAAA: 14%
ANY: 2%

A: 15%
MX: 80%
AAAA: 3%
ANY:0.3%

A little example (first week seen)



NOERROR: 90%
NXDOMAIN: 5%

NOERROR: 22%
NXDOMAIN: 75%

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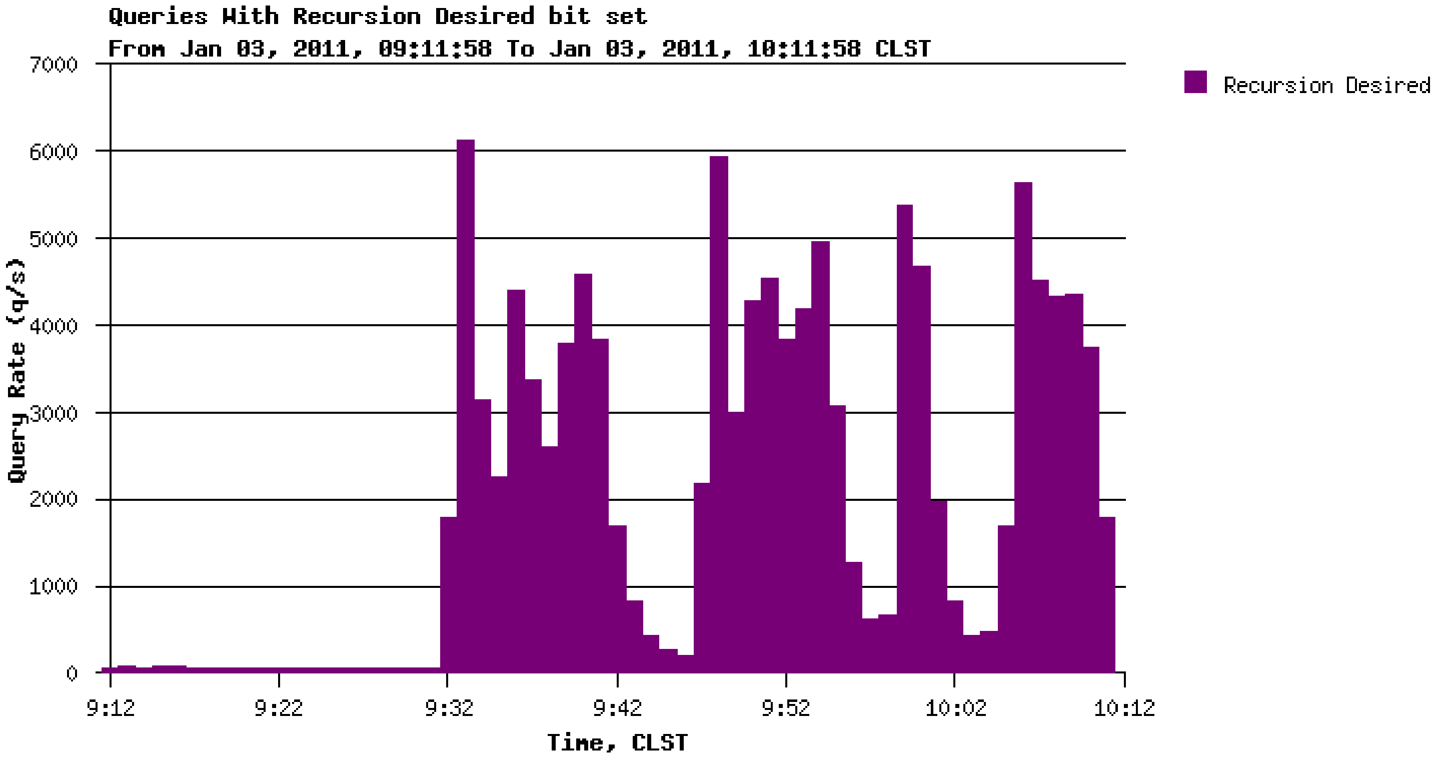
A little example (first week seen)



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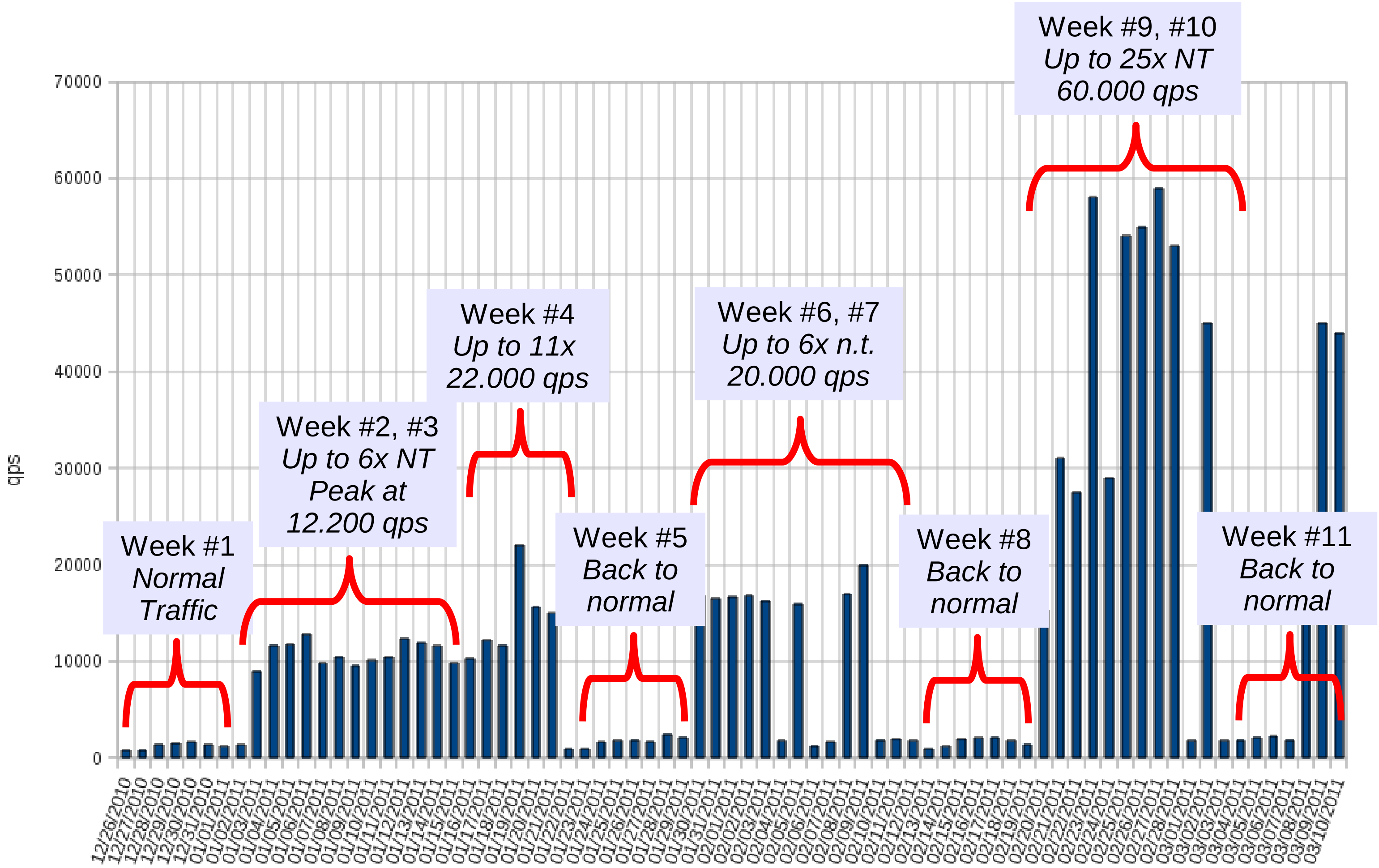
But then... it started to increase



Week #1
Normal Traffic

Week #2, #3
Up to 6x NT
Peak at 12.200 qps

Week #4
Up to 11x
22.000 qps

Week #5
Back to normal

Week #6, #7
Up to 6x n.t.
20.000 qps

Week #8
Back to normal

Week #9, #10
Up to 25x NT
60.000 qps

Week #11
Back to normal

Query Storm Affecting .CL

The TOP-10 hitters?

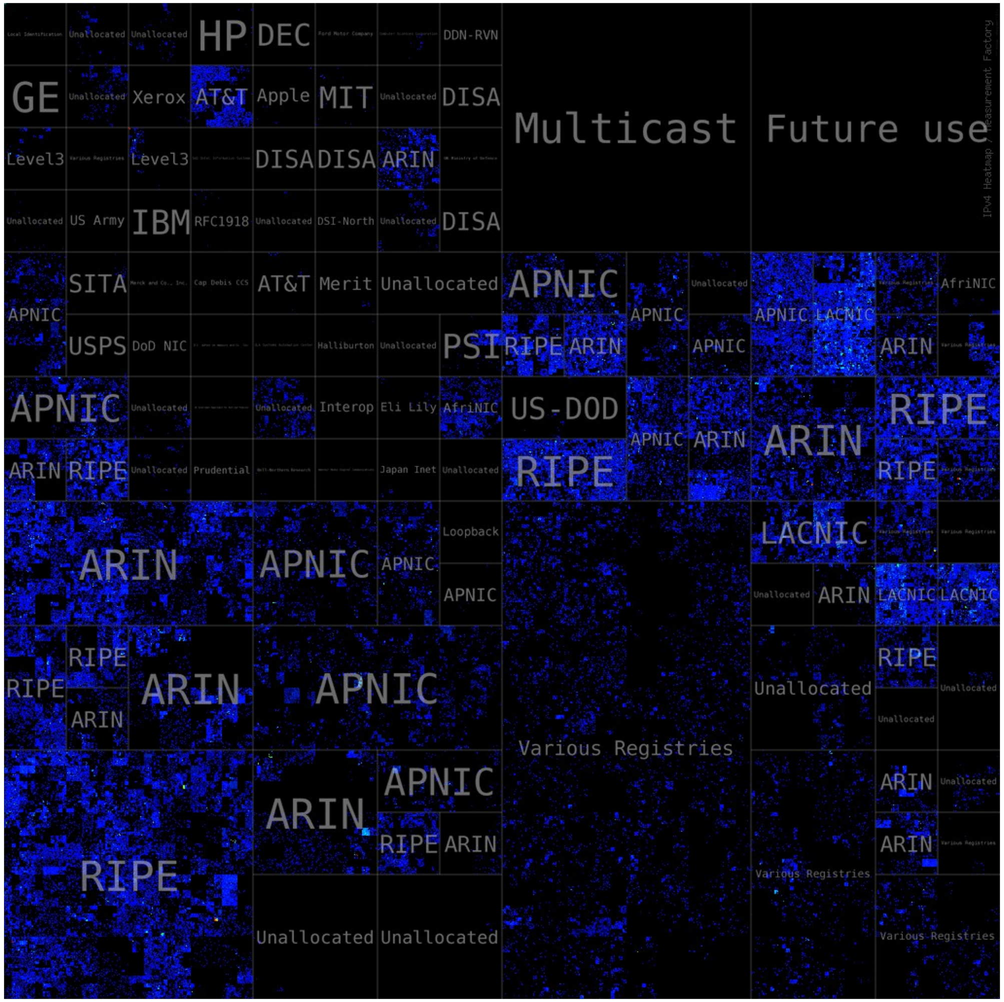
- T-10 by IP
  - 95.79.165.0
  - 212.94.96.113
  - 93.105.123.139
  - 178.137.18.68
  - 94.230.167.239
  - 212.182.115.131
  - 84.60.185.254
  - 89.216.144.251
  - 194.44.220.206
  - 193.110.165.118
- T-10 by ASN
  - 6849
  - 9050
  - 6697
  - 6147
  - 9198
  - 19429
  - 12715
  - 3269
  - 16735
  - 9121
- T-10 by country
  - UA
  - RU
  - RO
  - PE
  - IT
  - CO
  - ES
  - KZ
  - BR
  - US

# of unique IPs: ~500k

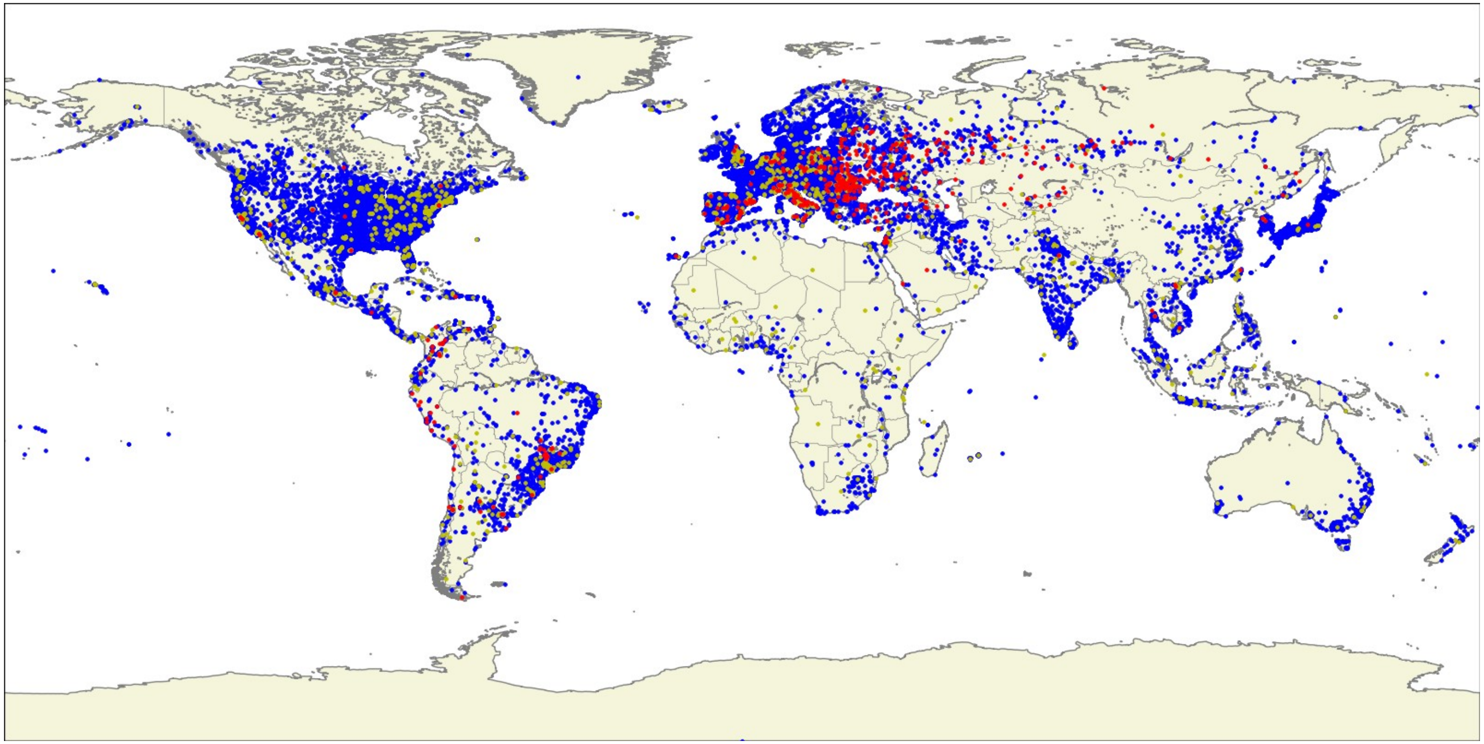
(sampled over 12 hours captures on *.nic.cl servers)

Distribution

Query Storm Affecting .CL



Distribution



What have they been asking for

Query Storm Affecting .CL

- Ascii to hex?
  - 01c15bb2.cl.
  - 01c2f8f1.cl.
  - 01c3318e.cl.
  - 01c34ab2.cl.
  - 01c36640.cl.
  - 01c39260.cl.
- dictionary?
  - zurih-chile.cl.
  - zurik-chile.cl.
  - zuro1999.cl.
  - zur-ofubo.cl.

- Malformed list?
  - 08b.cl.
  - 08biennial.cl.
  - 08family.cl.
  - 08g.cl.
  - 08q.cl.
  - 097lider.cl.
  - 09ales.cl.
  - 09atencion.cl.
  - 09coolman.cl.
  - 09family.cl.

- Final users?
  - 79-17-112.adsl.terra.cl.
  - 79-40-89.adsl.terra.cl.
  - 78-67-20-190.adsl.tie.cl.
  - xxx-23d7036f.adsl.terra.cl.
  - xxx-23dba370.adsl.terra.cl.
  - bd063ee.cpe.telmex.com.cl
  - 2005.cpe.telmex.com.cl
  - xlr9cp15q7.cpe.telmex.com.cl
  - d86dd4.cpe.telmex.com.cl
  - 32b0b9c6.cpe.telmex.com.cl
  - 2fcb5a43a79b496.cpe.telmex.com.cl

What have we done?

- Re-distribute traffic between nodes in our self-managed anycast clouds (AS-path prepending).
- Disable temporary logging on BIND servers.
- Change our last unicast to an anycast one.
- Improve our BW, QPS and conntrack monitors and alerts.
- Contact other TLDs and associates to gather more info

Things learn on the way

- International BW almost topped on main site
- iptables filter *udp/tcp 53* vs *raw table*
- IDS can trigger block/stop traffic on some ISPs
- *Small packets* flood on border routers on some ISPs could do some nasty things

Some things to think about it...

- To filter packets costs more than just give the answer.
- Over provisioning is one of the keys.
- DNS service providers that rates you by per-query basis, could be extremely expensive.
- ISP contracts must be prepared to give you more BW under emergency
- This is a spam botnet? Or something else?