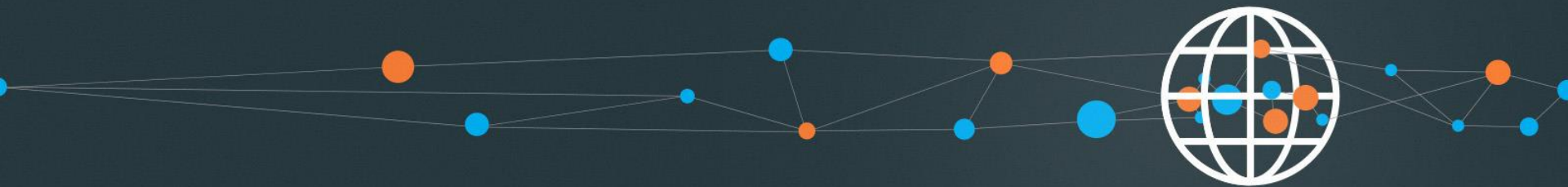




Learning from Major Outages in 2015

Primož Sečnik Kolman, CS Engineer



Level 3 Route Leak

June 12th 2015

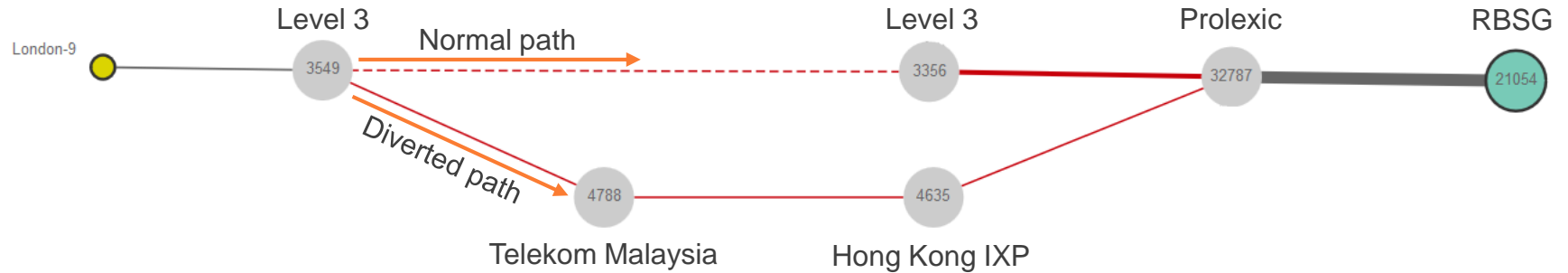
Level 3 Route Leak

- June 12th 8:43 UTC, Telekom Malaysia (AS 4788) announced a large portion of the global routing table
- Level 3 / Global Crossing network (AS 3549) accepted these routes and advertised them to Level 3's peers
- New traffic, following these routes into Level 3 and Telekom Malaysia, inundated the Level 3 network and major peering points
- Leak affected a large number of prefixes belonging to internet services including Google, Microsoft, LinkedIn, AOL, Reddit, Dow Jones...

Level 3 Route Leak

Royal Bank of Scotland Digital

<https://www.rbsdigital.com>



xe-5-3-0.edge5.London1.Level3.net

3 traces terminate here

Forwarding Loss 86% (18 of 21 packets)

IP Address 212.187.138.197

Prefix 212.187.128.0/17

Network Level 3 Communications, Inc. (AS 3356)

Location London, England, UK

Interface Type 10 Gigabit Ethernet

Vendor Juniper

Avg. Response 4.2 ms

Level 3 Route Leak

Royal Bank of Scotland Digital

<https://www.rbsdigital.com>

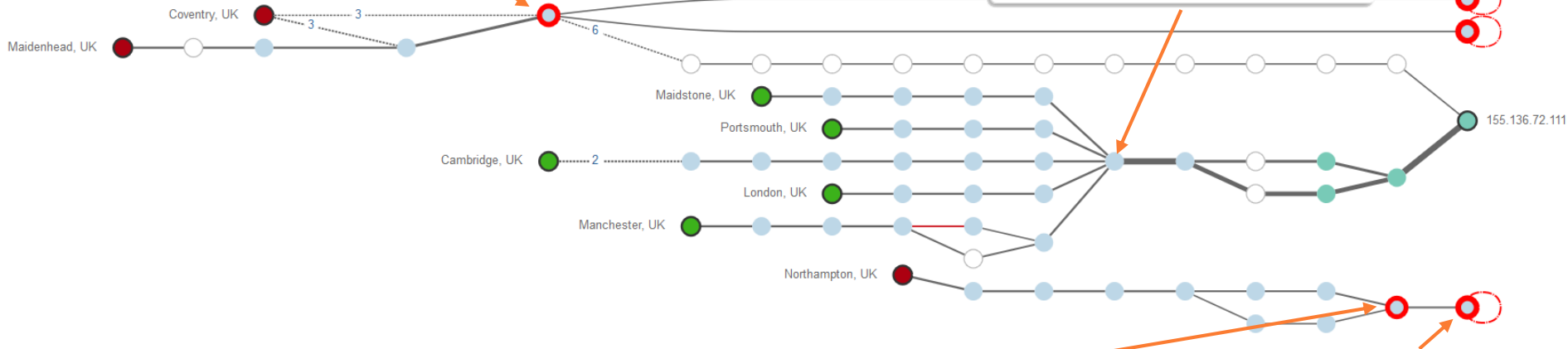
blackhole.prolexic.com

IP Address 195.66.224.31

Prefix 195.66.224.0/22

Network Defaultroute Limited (AS 61081)

Avg. Response 4.9 ms



level3.lon01.atlas.cogentco.com

1 trace terminates here

Forwarding Loss 75% (6 of 8 packets)

IP Address 130.117.15.246

Prefix 130.117.0.0/16

Network Cogent Communications (AS 174)

Location London, England, UK

Avg. Response 6.3 ms

ae-115-3501.edge3.London15.Level3.net

2 traces terminate here

IP Address 4.69.167.74

Prefix 4.0.0.0/9

Network Level 3 Communications, Inc. (AS 3356)

Location London, England, UK

Interface Type Ethernet Bundle

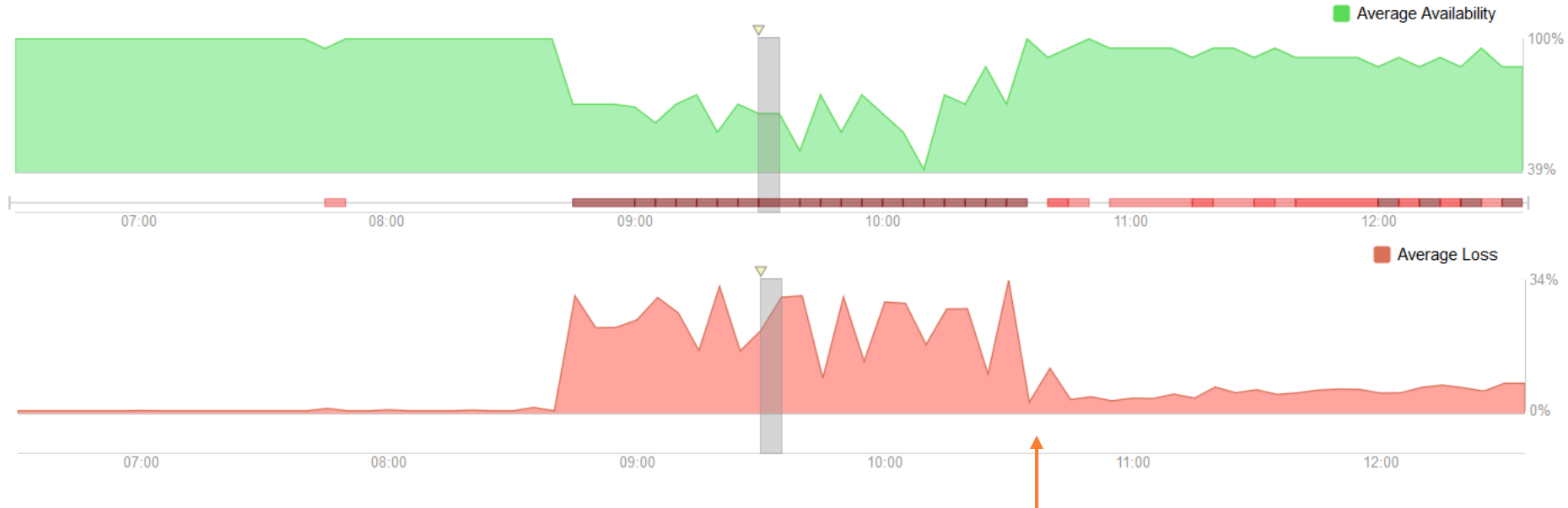
Avg. Response 6.3 ms



Level 3 Route Leak

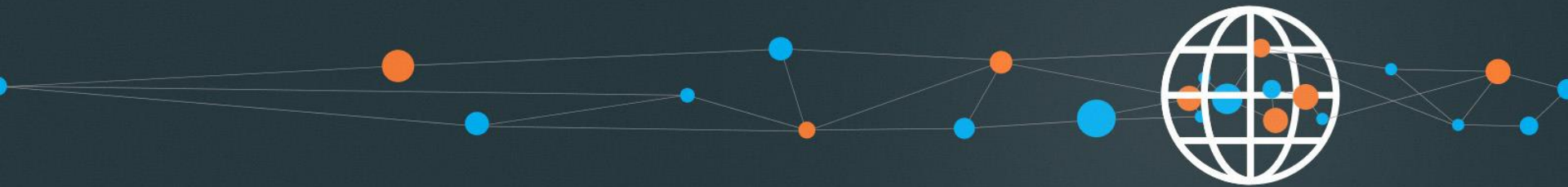
Capital One

<https://home.capitalone360.com>



Level 3 stopped accepting MT routes





Amazon Web Services Route Leak

July 1st 2015

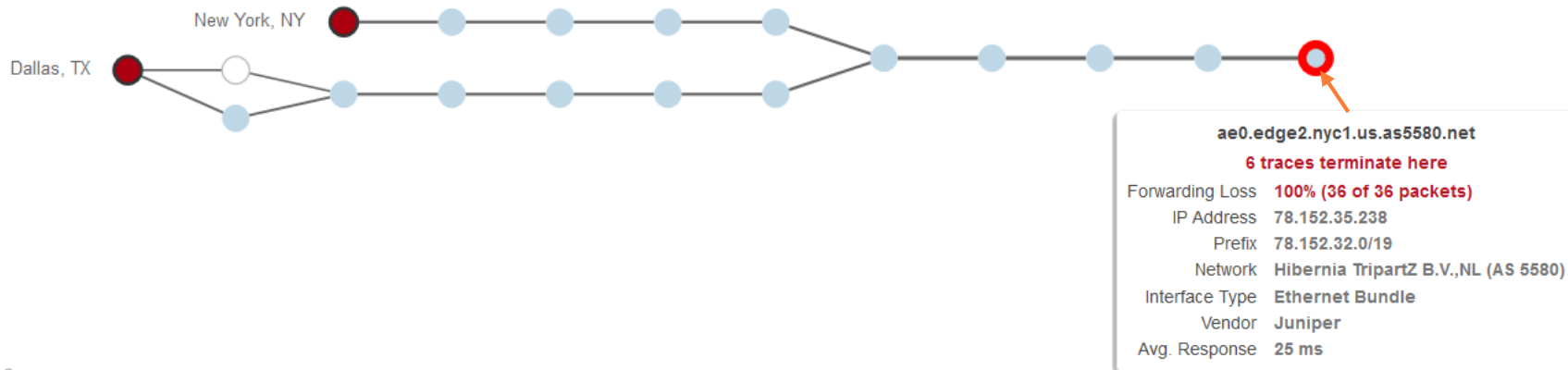
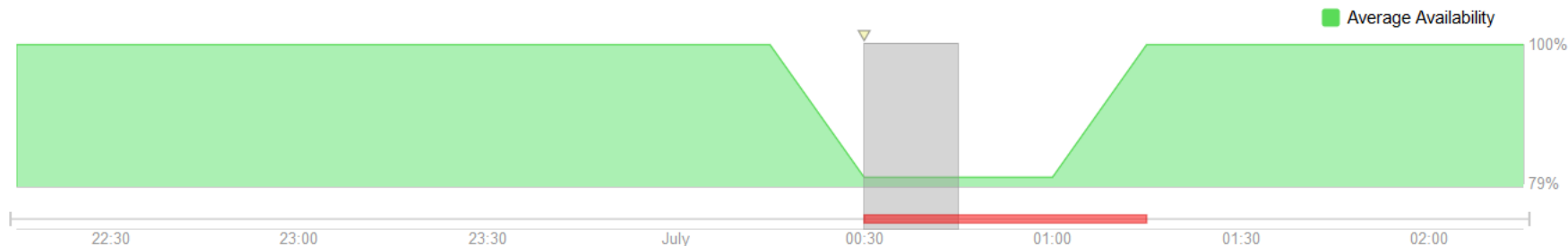
Amazon Web Services Route Leak

- July 1st 0:24 - 1:10 UTC a number of networks around the world indicated issues with Amazon & AWS services
- Internal alerts that many customers were being impacted by loss in two specific networks
- Route leak from AxcelIX (AS33083), a data center provider in Boston
- All of Amazon's prefixes originating in AS14618 were affected to some degree

Amazon Web Services Route Leak

Tinder

<https://api.gotinder.com>



Amazon Web Services Route Leak

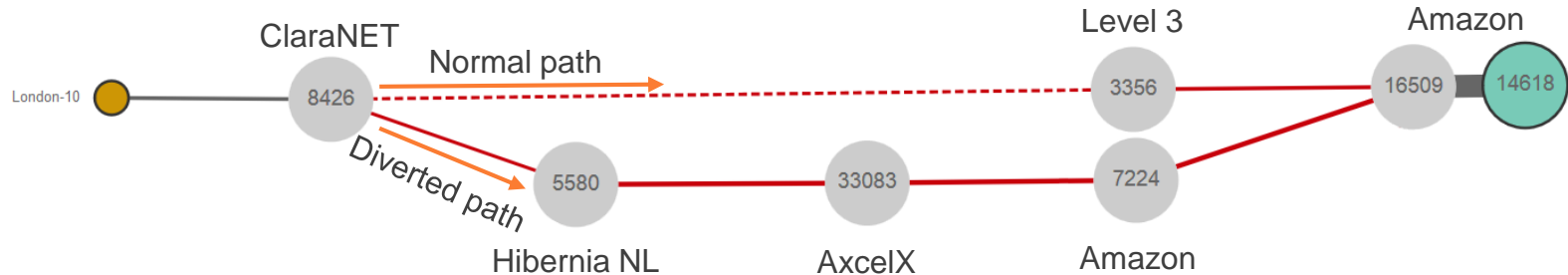
TIME: 07/01/15 00:24:49

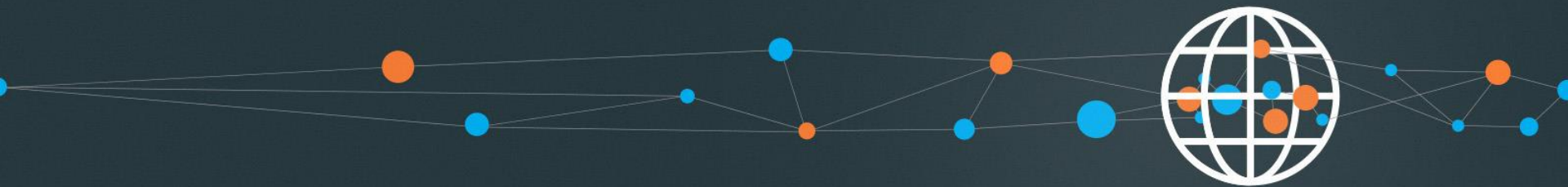
TYPE: BGP4MP/MESSAGE/Update

ASPATH: 8426 5580 33083 33083 33083 33083 7224 16509 14618

ANNOUNCE

23.20.0.0/15
23.22.0.0/15
50.16.0.0/16
50.17.0.0/16
50.19.0.0/17
50.19.128.0/17
52.0.0.0/15
52.4.0.0/14
54.80.0.0/14
54.84.0.0/15
54.86.0.0/16
54.87.0.0/16
54.88.0.0/16
54.89.0.0/16
54.90.0.0/15
54.92.128.0/17
54.144.0.0/14
54.152.0.0/16
54.156.0.0/14
54.160.0.0/14





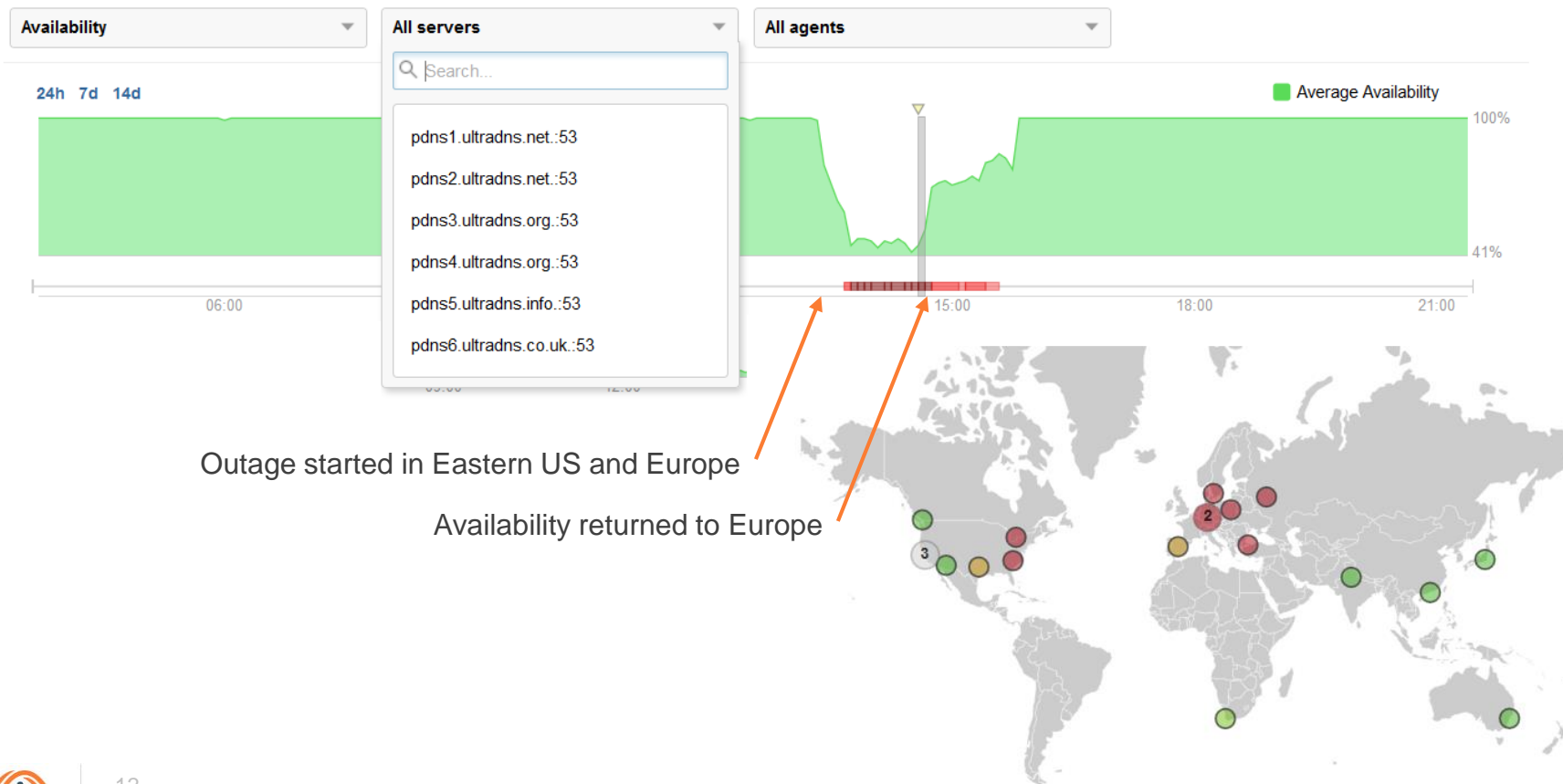
UltraDNS Outage

October 15th 2015

UltraDNS Outage

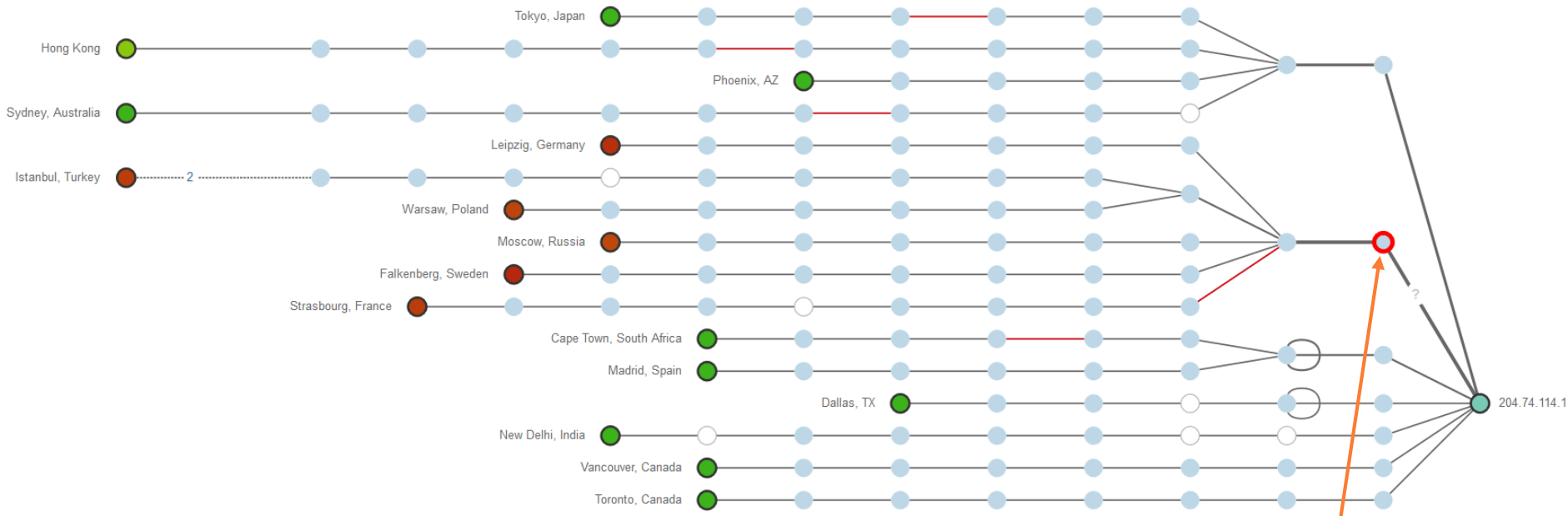
- October 15th 20:25 - 22:45 UTC many UltraDNS name servers were unreachable or slow to reach
- UltraDNS is a major DNS service provider: Netflix, Expedia, major banks, Uber, Pornhub
- Neustar initially claimed they were under DDoS, later claimed it was a server issue on the East coast
- In the end Neustar tweeted it was a management configuration error

UltraDNS Outage



UltraDNS Outage

pdns5.ultradns.info



NEUSTAR-INC.car2.Amsterdam1.Level3.net

Forwarding Loss **60% (9 of 15 packets)**

IP Address 212.72.43.250

Prefix 212.72.32.0/19

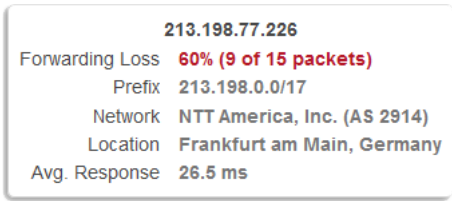
Network Level 3 Communications, Inc. (AS 3356)

Location Amsterdam, Netherlands

Avg. Response 34 ms



pdns3.ultradns.org



UltraDNS Outage

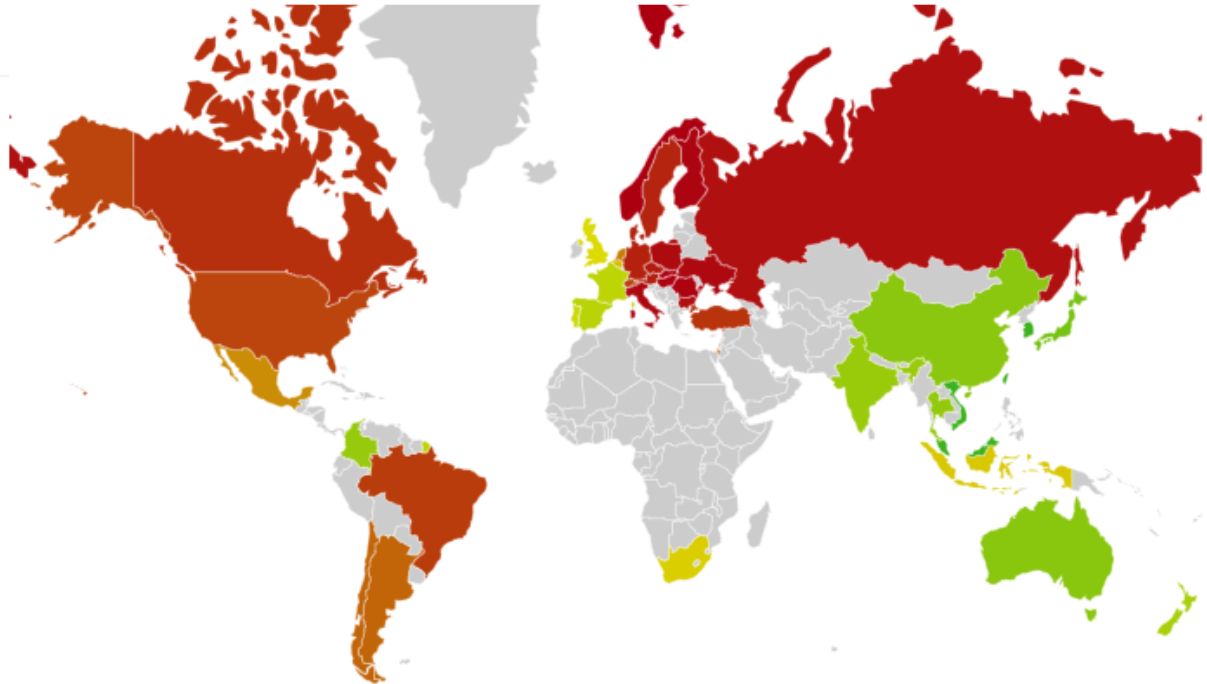
Zions Bank

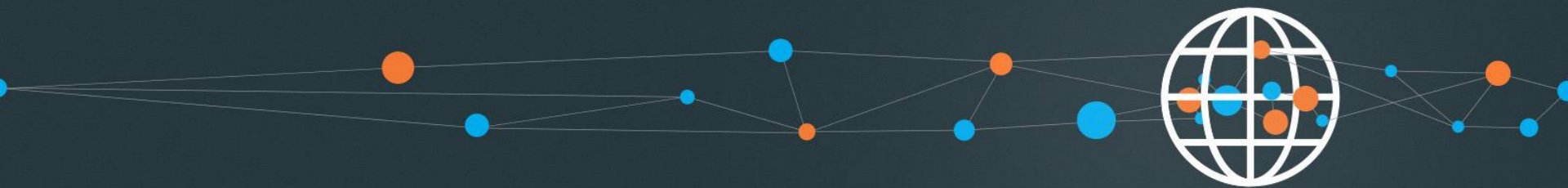
zionsbank.com – TTL 300

Worldwide Details

Availability  63.7%

Vantage
Points 2010 in 45 countries





Brazil blocks WhatsApp

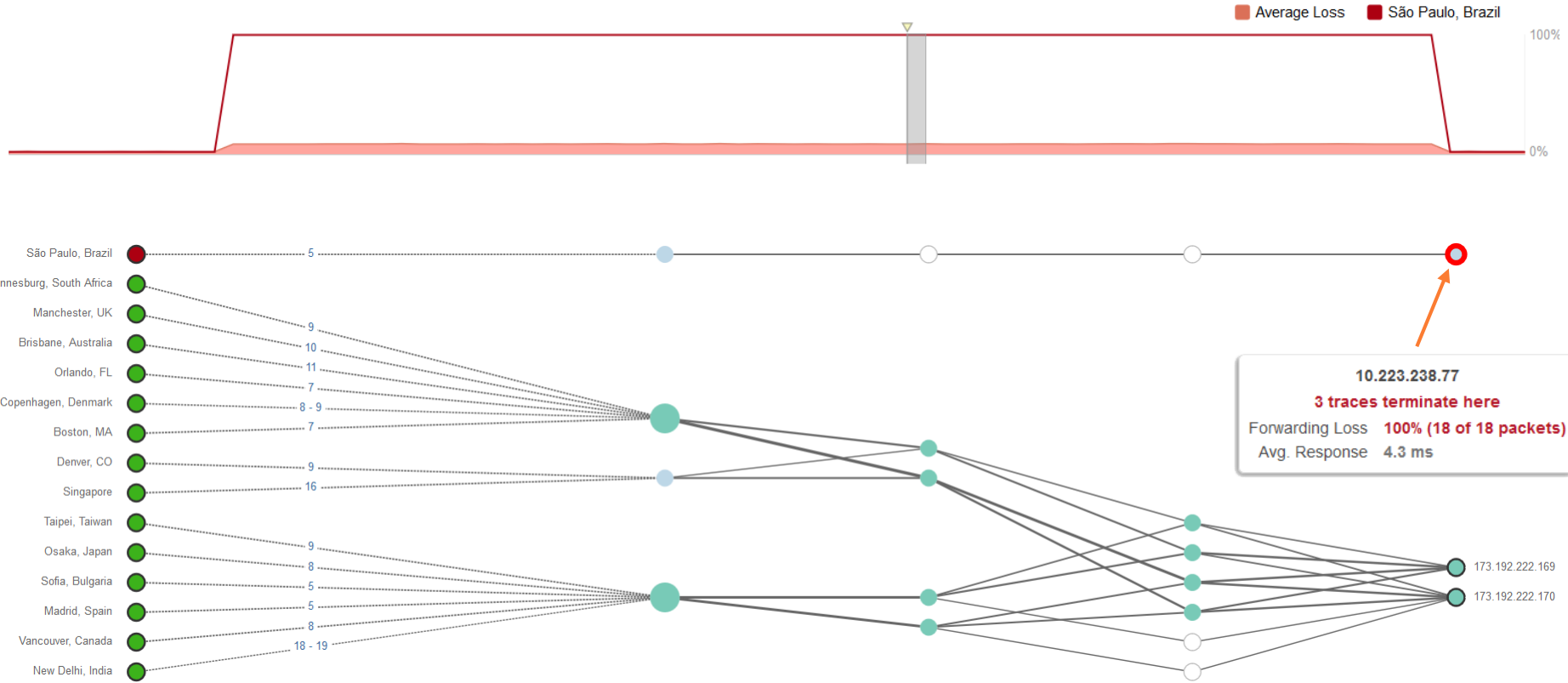
December 17th 2015

Brazil blocks WhatsApp

- Brazil was a „Net Neutrality“ champion in 2013, 2014, but reversed their position in 2015
- WhatsApp has around 93 million users in Brazil
- Telcos lobby against WhatsApp's voice services
- After WhatsApp refused turning over data in an investigation, court ordered a 48h WhatsApp blackout started on Dec 17th
- 12h into the blackout a second judge overruled the decision as unreasonable
- Telegram claimed 1 million new Brazilian users overnight, later claimed 5 million new users in a day

Brazil blocks WhatsApp

c.whatsapp.net



Shared Links

Level 3

- <https://ydlicmate.share.thousandeyes.com>
- <https://oxqyi.share.thousandeyes.com>

AWS

- <https://zqmybl.share.thousandeyes.com>
- <https://gqnhtvik.share.thousandeyes.com>

UltraDNS

- <https://bogxsmcxc.share.thousandeyes.com>
- <https://fmsdacjo.share.thousandeyes.com>

WhatsApp

- <https://hcdhfo.share.thousandeyes.com>



Thank you.
primoz@thousandeyes.com

