

from Start > Growth



IPv6 day observations

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A Brief History of NTT and IPv6

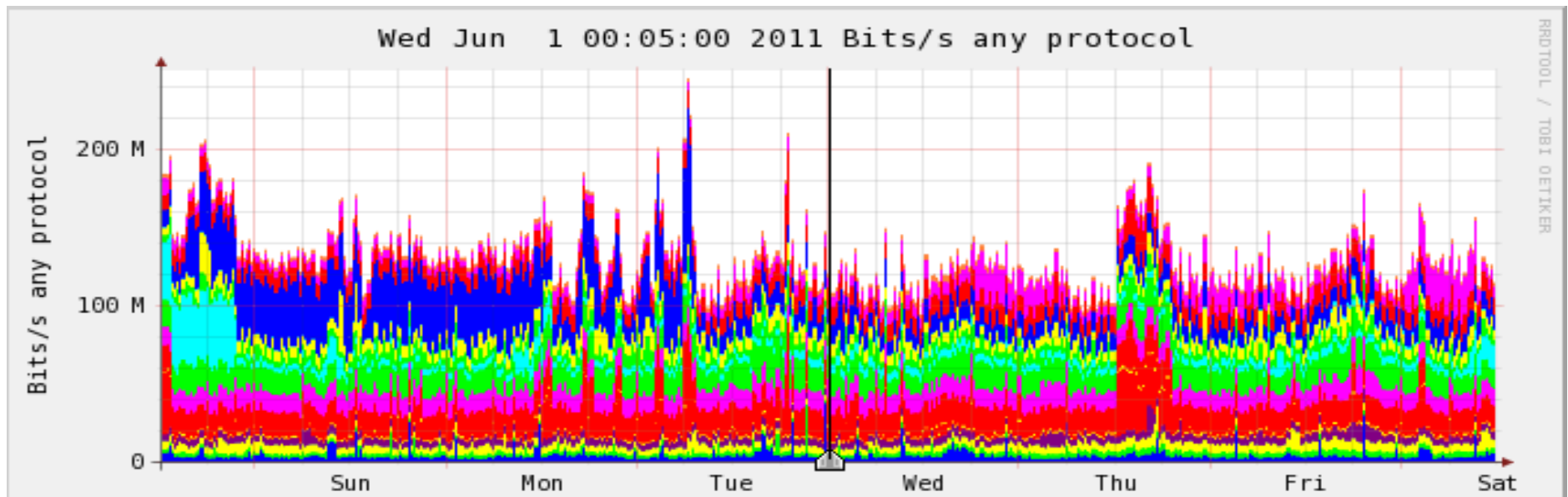
- ▶ 1996 – NTT Labs built one of the world’s largest IPv6 research networks
- ▶ 1997 – Northwestnet and CICNet, two of the original NSFnet regional networks joined the 6bone, and consolidated under Verio the following year
- ▶ 1999 – NTT Communications begins IPv6 tunneling trial for Japanese customers
- ▶ 2001 – NTT Communications offers commercial IPv6 service
- ▶ 2003 – NTT/VERIO becomes the first Tier 1 ISP to go dual stack
- ▶ 2004 – The NTT/VERIO Global IP Network begins offering commercial native and tunneled IPv6 services

Some caveats

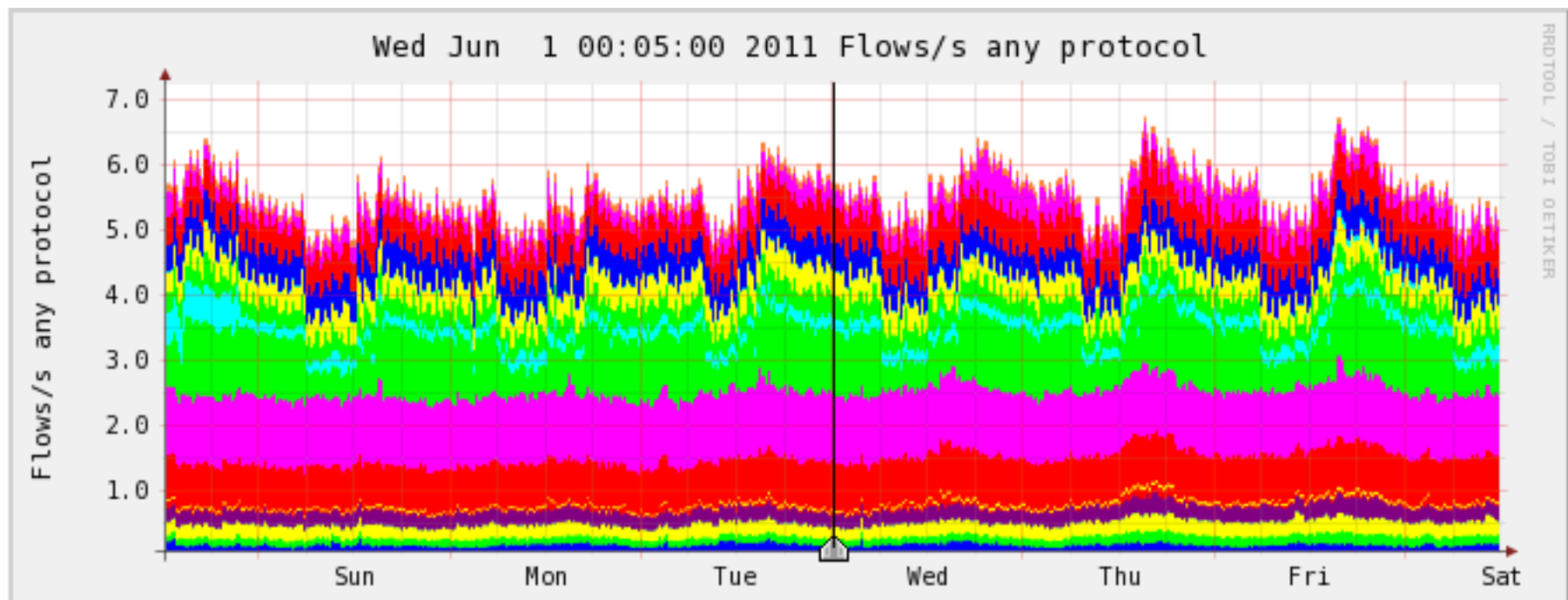
- ▶ Not all network elements are exporting IPFIX data for IPv6
- ▶ Sampling rate is 1:10,000
- ▶ Mostly looking at customer and peering interfaces
- ▶ Using nfsen to collect and display data

And now, some data ...

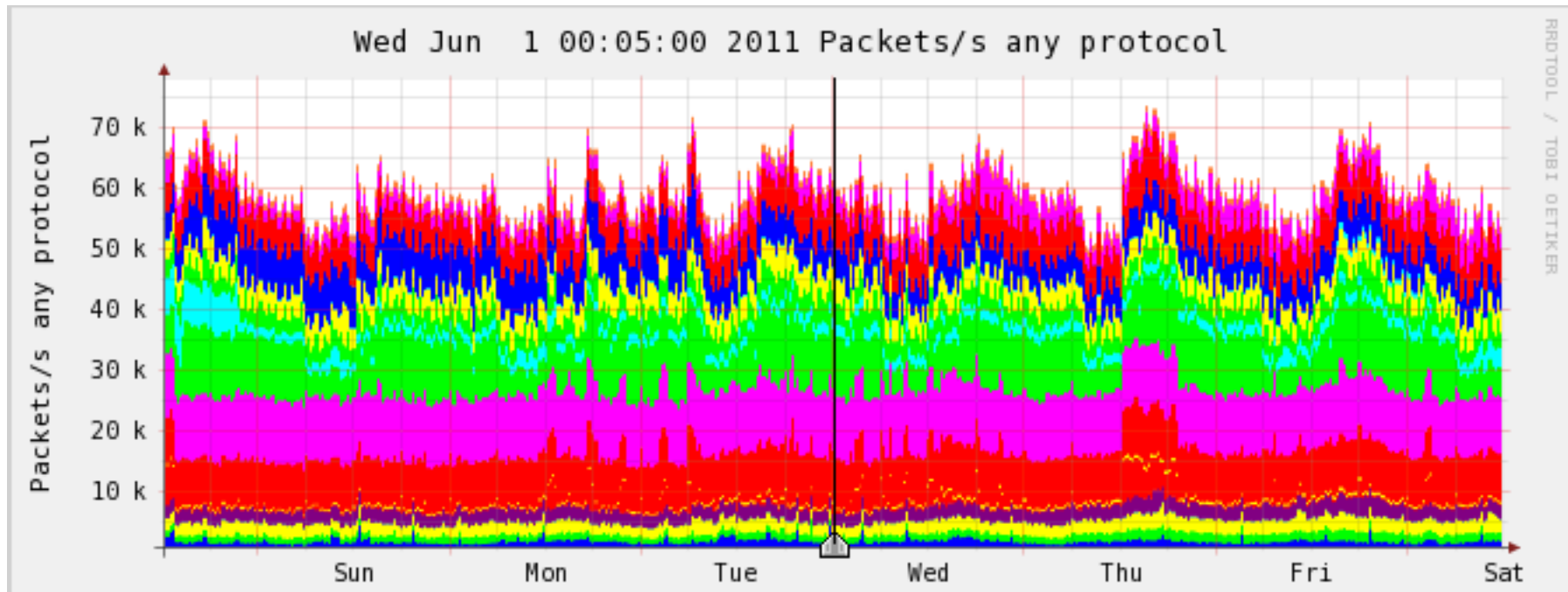
- ▶ 2011-06-01 to 2011-06-07
- ▶ Traffic levels 124.3Mb/s (tcp: 60.1Mb/s, udp: 31.1Mb/s, icmp: 32.4Mb/s other: 642.9kb/s)



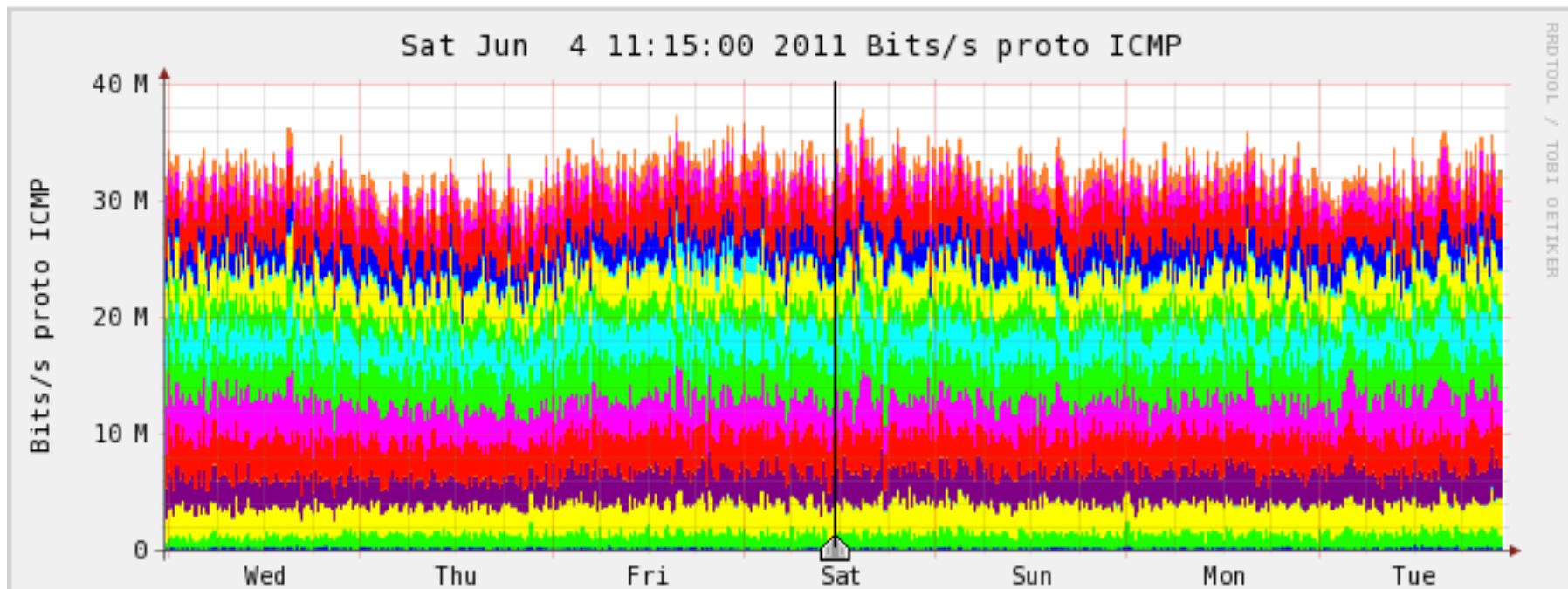
Flows per second



Comparable pps graph



It's all just ping, right?

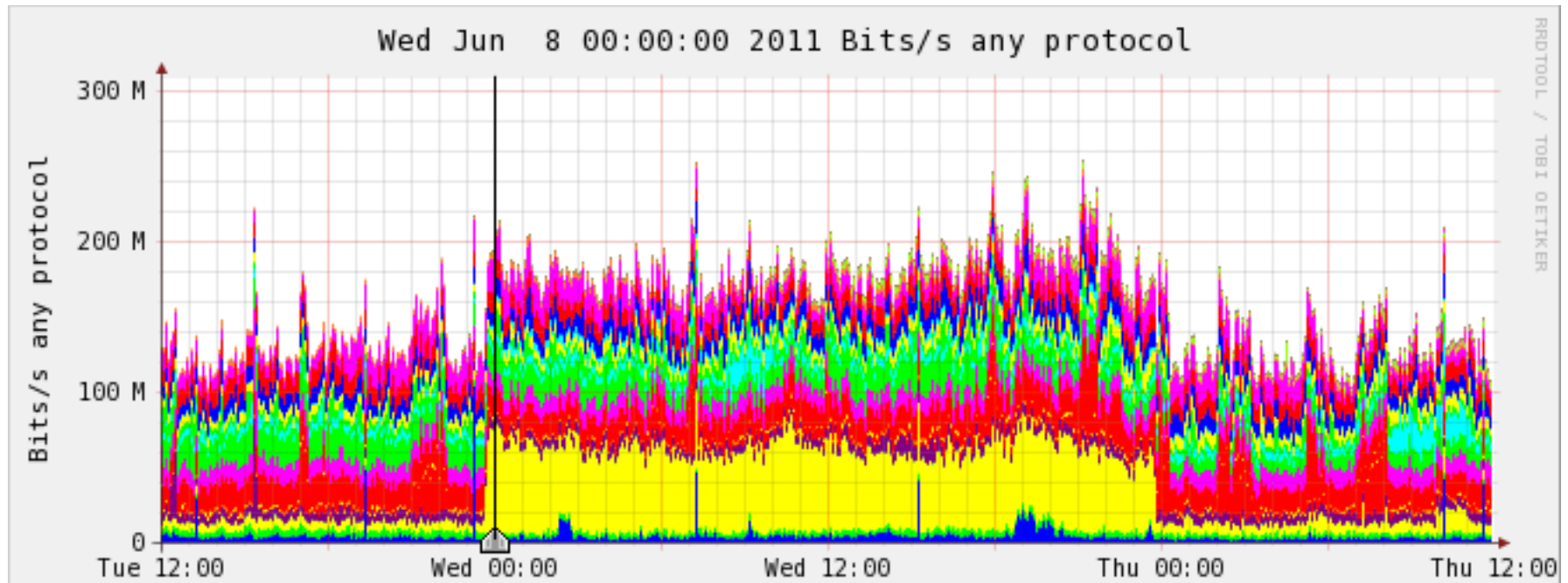


Preparations for IPv6 day

- ▶ Worked with peers to dual-stack interfaces
- ▶ Contacted customers to ask them to dual-stack as well
- ▶ Noticed considerable growth in visible ASNs in IPv6 table
 - 2011-MAY-11 3767
 - 2011-JUN-06 4024
 - 2011-JUN-07 4037
 - 2011-JUN-08 00:00 4069
 - 2011-JUN-12 4136
- ▶ 370 discrete networks added IPv6 in a one month time frame

IPv6 day traffic levels

- ▶ Increased to 182.7Mb/s (tcp: 116Mb/s, udp 33.3Mb/s, icmp 32.5Mb/s, other 871.6kb/s) – Peaks at 253Mb/s



Top Applications (by bytes)

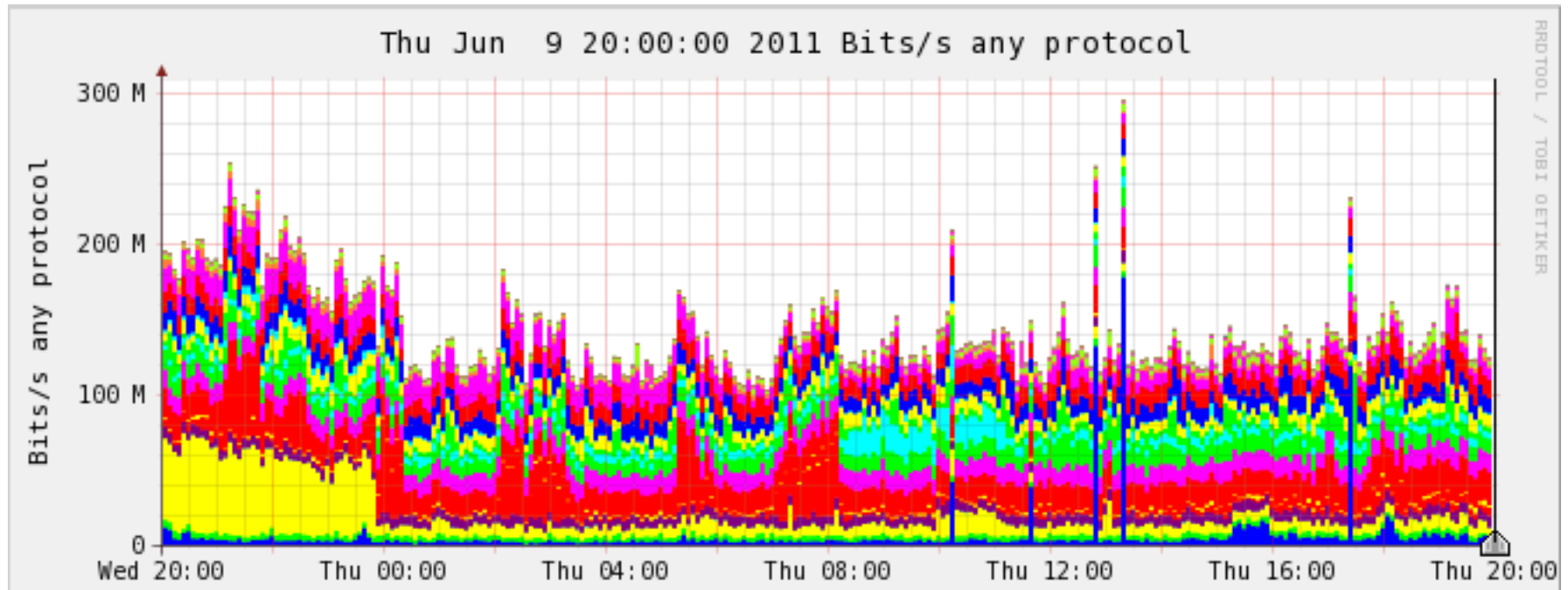
▶ TCP

- 80 64.6% - www
- 7000 21.3% - torrent
- 873 5.5% - rsync
- 22 2.8% - ssh
- ...

▶ UDP

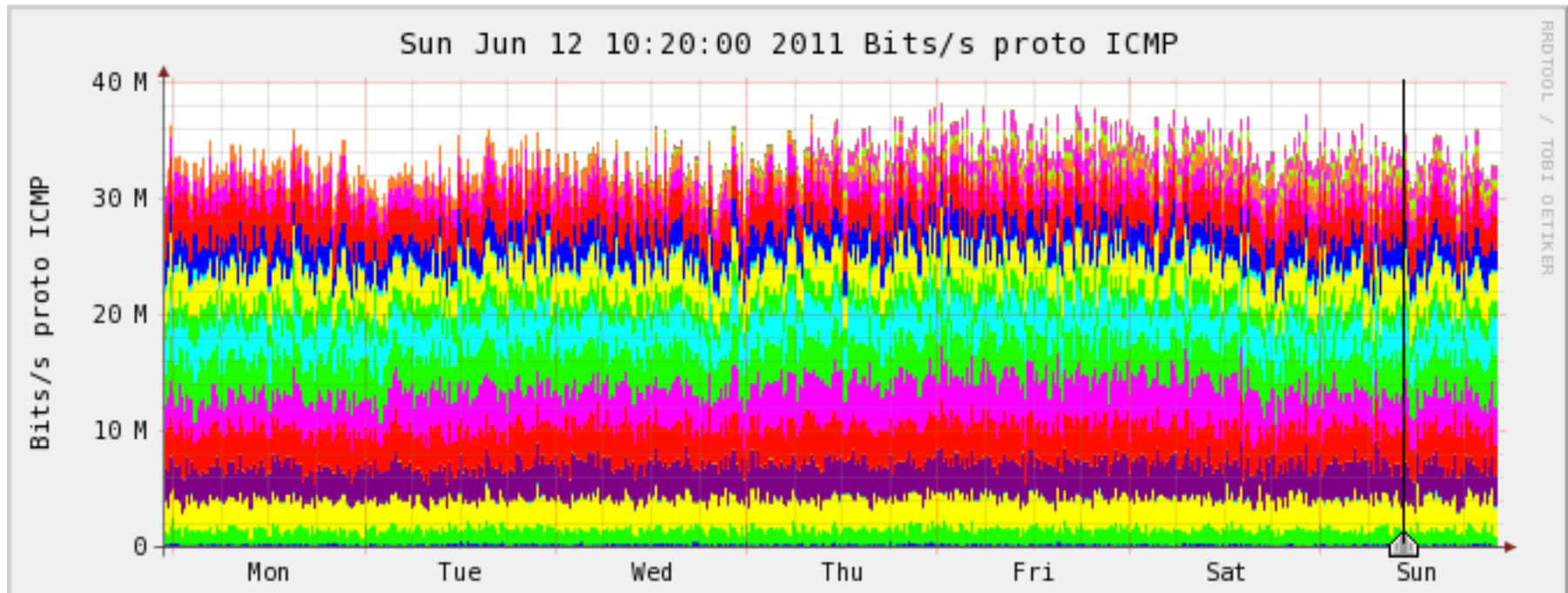
- 53 97.1% - dns
- 13206 0.8% - ???
- ...

But wait, did you catch that back there..?

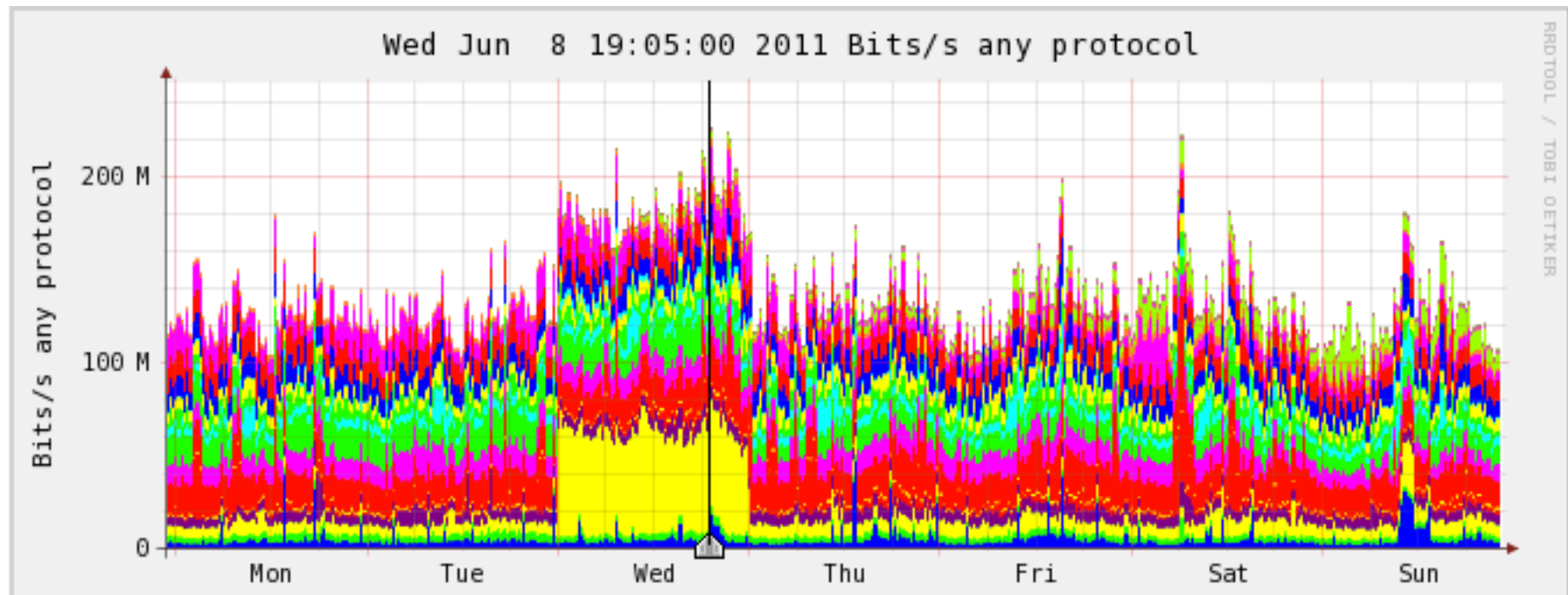


Jump in traffic on June 9th to 294.7Mb/s, mostly in AMS

It's just all ICMP, right?



Last minute addition...



Thank you to...



- ▶ ISOC
- ▶ Yahoo Inc
- ▶ Facebook
- ▶ Google
- ▶ Akamai
- ▶ Limelight
- ▶ NTT
- ▶ Everyone who tested IPv6 on June 8th
- ▶ nfsen developers – <http://nfsen.sf.net/>