The IPv6 Hour at RIPE 56

Building an IPv6-only Network

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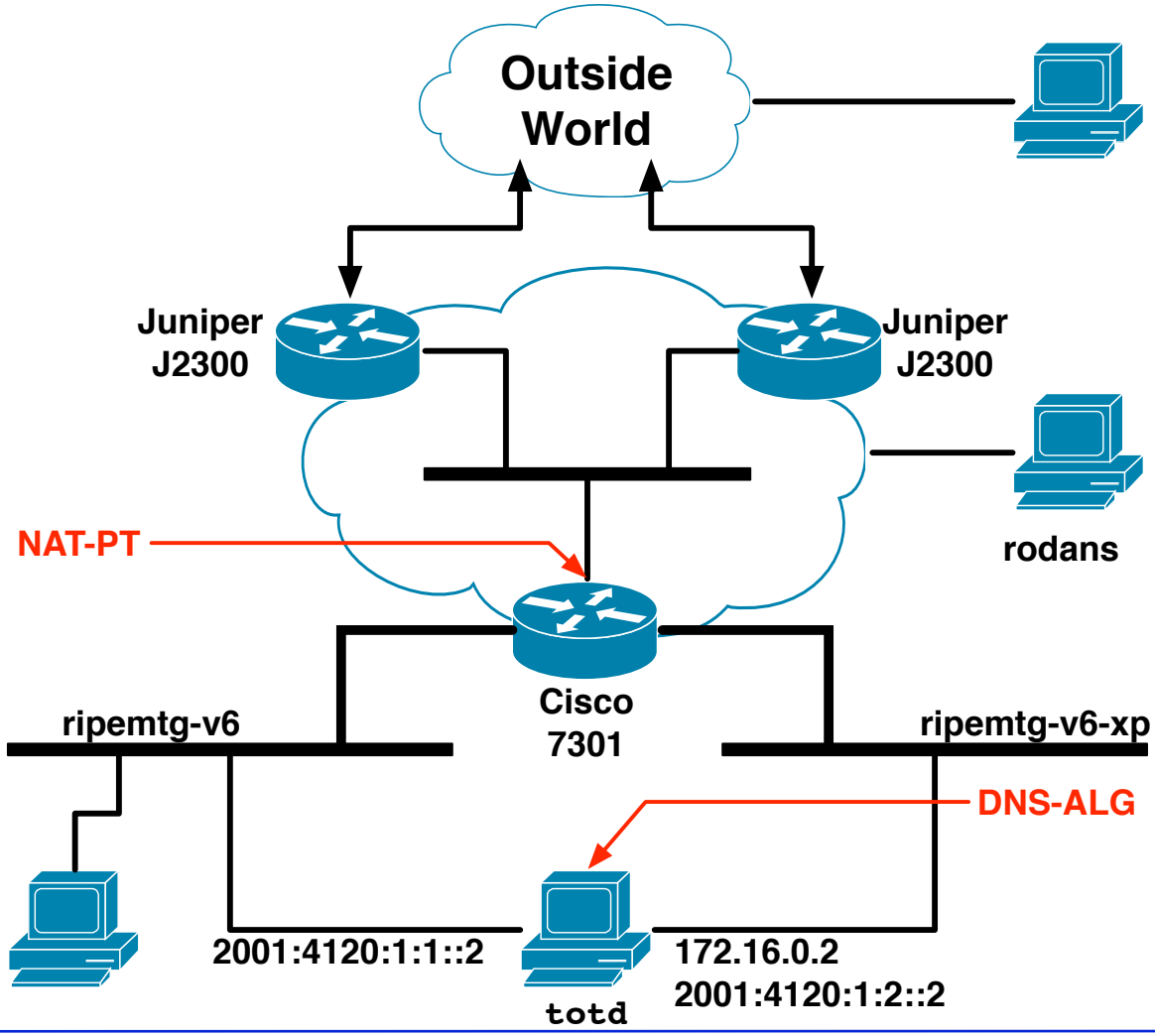
Overview

- The IPv6 Networks
- IPv6 Transition Mechanisms
- The RIPE Meeting IPv6 network
- IPv6 Hour Statistics
- Questions

The RIPE Meeting IPv6 networks

- Classic dual-stack network
  - **ripemtg** / **ripemtga**
  - 2001:4120:1::/64
- IPv6-only
  - **ripemtg-v6** / **ripemtga-v6**
  - 2001:4120:1:1::/64
- IPv6 with local RFC1918 resolver for Windows XP
  - **ripemtg-v6-xp** / **ripemtga-v6-xp**
  - 2001:4120:1:2::/64

The RIPE Meeting (IPv6) Network



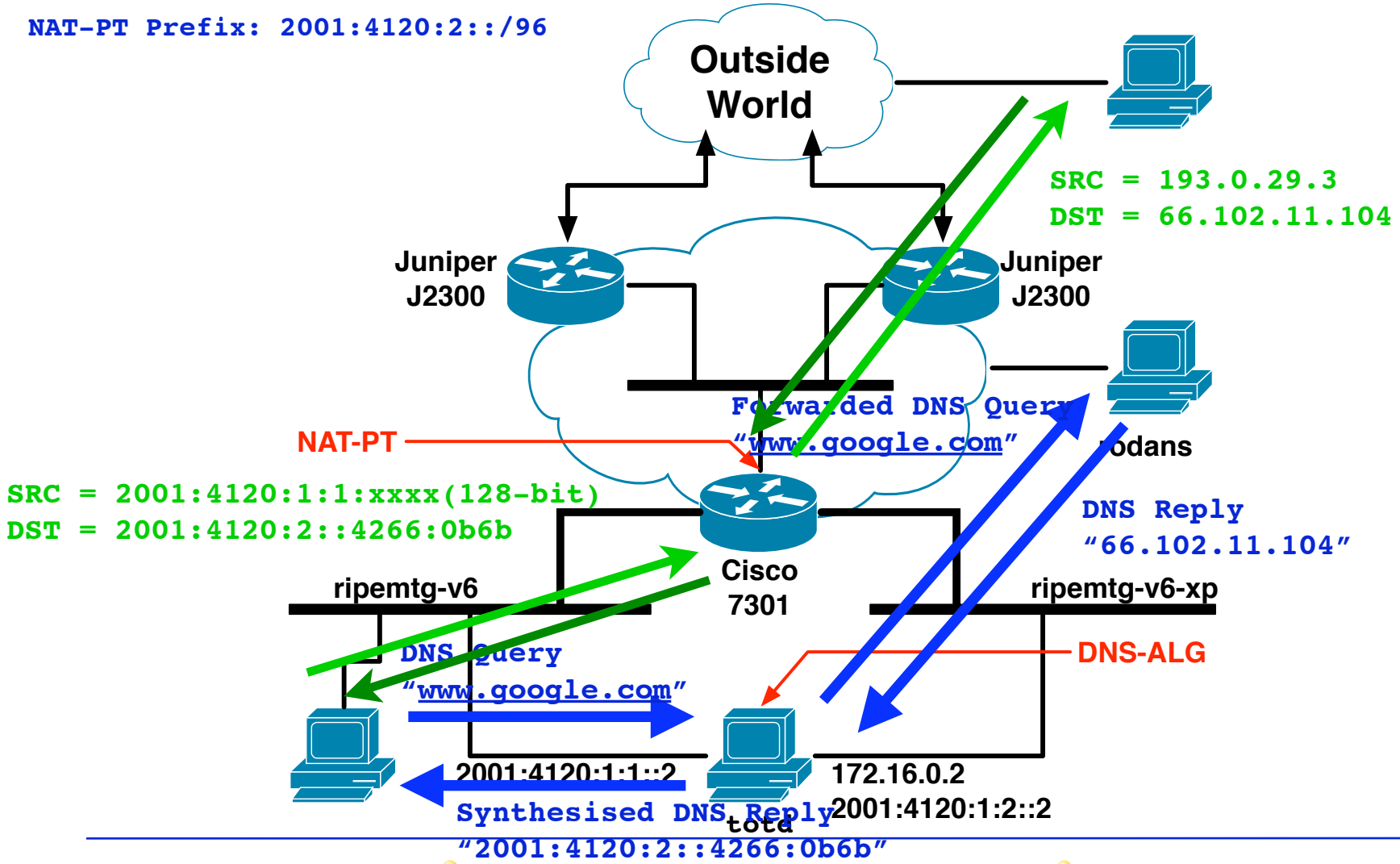
IPv6 Transition Mechanisms

- NAT-PT
  - Network Address Translation - Protocol Translation
  - RFC2766
  - Cisco IOS 12.4(15)T5 “Advanced IP Services”
    - this version is from 1 May 2008 but 12.4(15)T3 or later “Should Also Work”.
  - IPv4 sites will see all traffic originating from 193.0.29.3
- DNS ALG
  - DNS Application Layer Gateway
  - Synthesises **AAAA** records for those DNS entries which have only **A** records
  - totd software

DNS ALG

- DNS **A** records are of no use on a pure IPv6 network so what do we do if we receive only an **A** record in response to a query?
- Local DNS proxy (totd) has a hack: takes an **A** and embeds in within a particular IPv6 prefix and returns a synthesised **AAAA**.
- NAT-PT knows the prefix and strips it back to IPv4 when a packet leaves the pure IPv6 network

DNS ALG / NAT-PT



Cisco NAT-PT configuration

- On each interface:

```
ipv6 nat
```

- NAT-PT configuration:

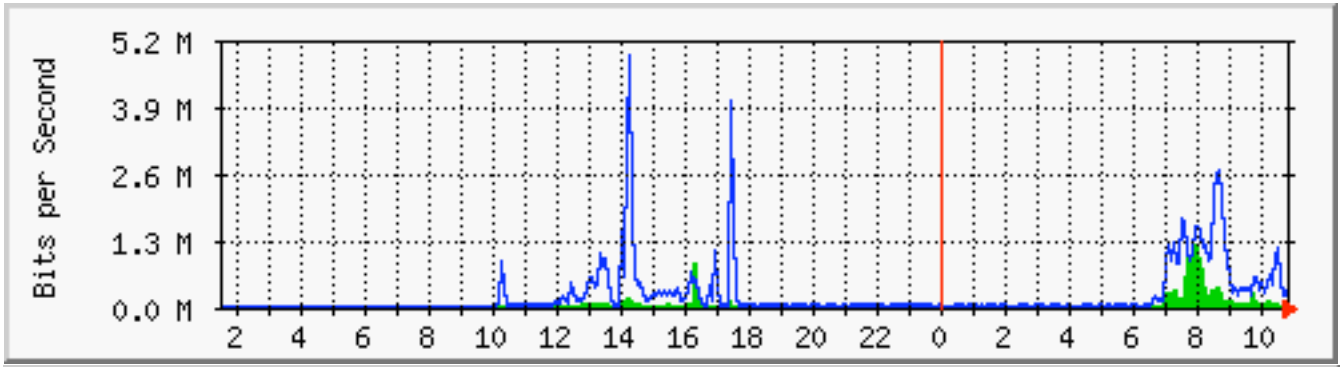
```
ipv6 nat v6v4 source list NATPT interface Loopback0 overload
ipv6 nat prefix 2001:4120:2::/96 v4-mapped NATPT

ipv6 access-list NATPT
 permit ipv6 2001:4120:1:1::/64 2001:4120:2::/96
 permit ipv6 2001:4120:1:2::/64 2001:4120:2::/96
```

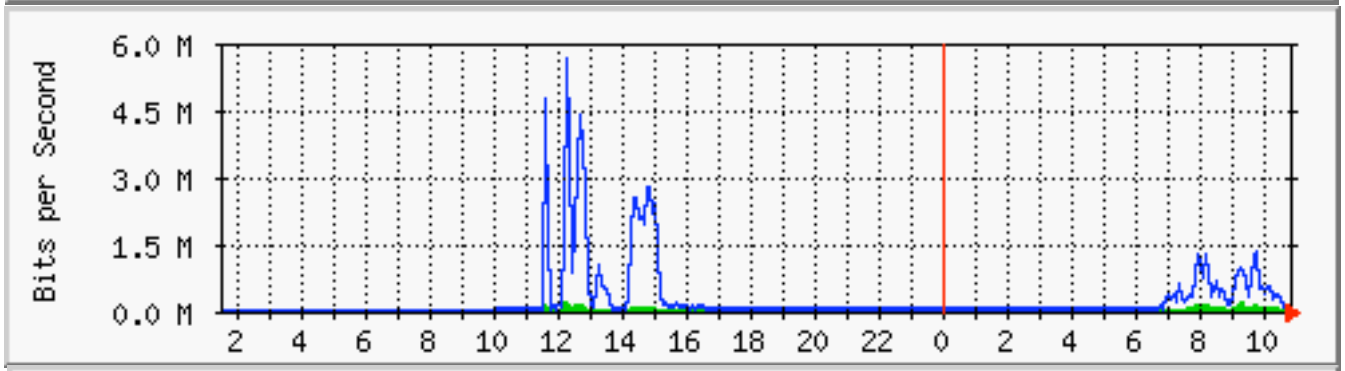
IPv6 Hour Statistics

Cisco 7301 statistics

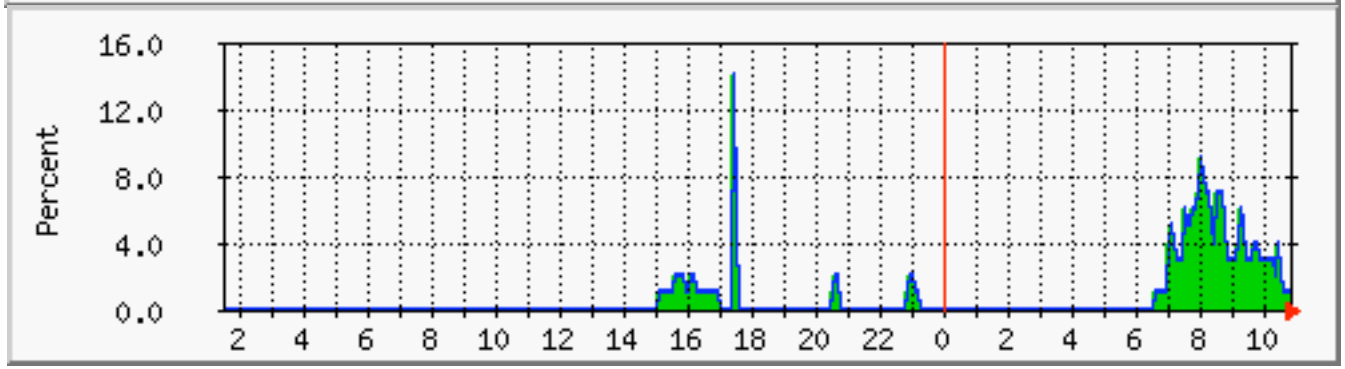
ripemtg-v6
Peak today
~ 2.6 Mbps



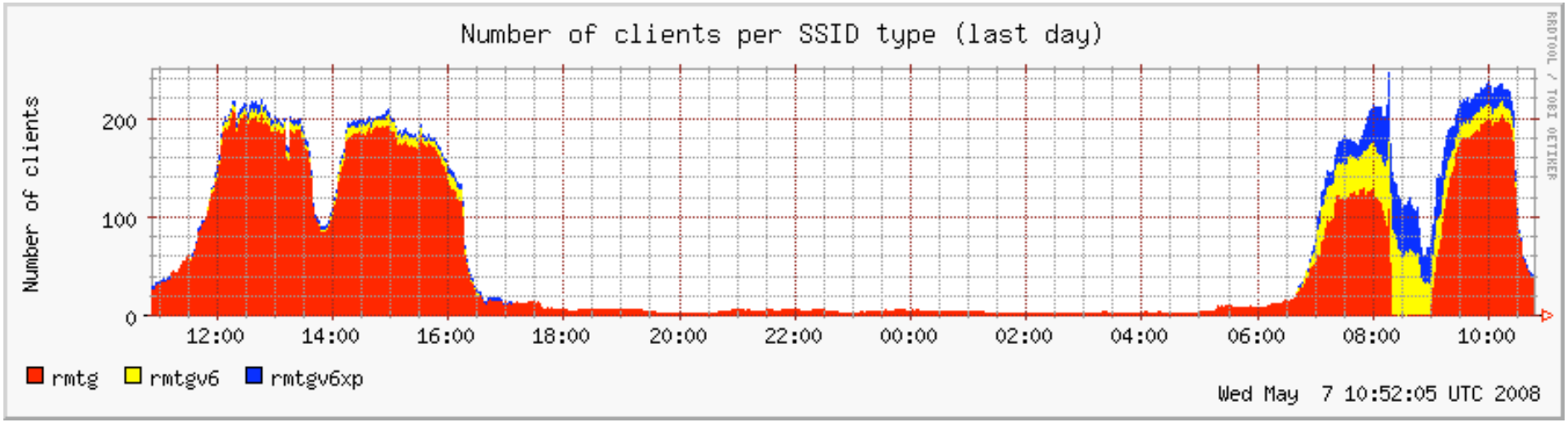
ripemtg-v6-xp
Peak today
~ 1.5 Mbps

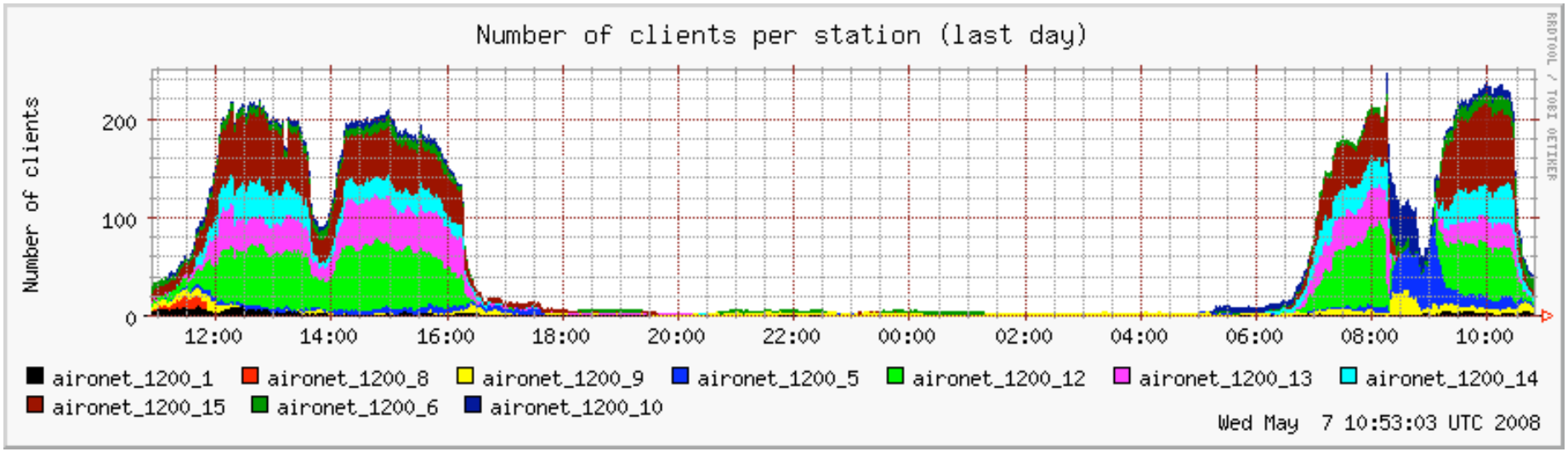


CPU load
Peak today
~ 10%

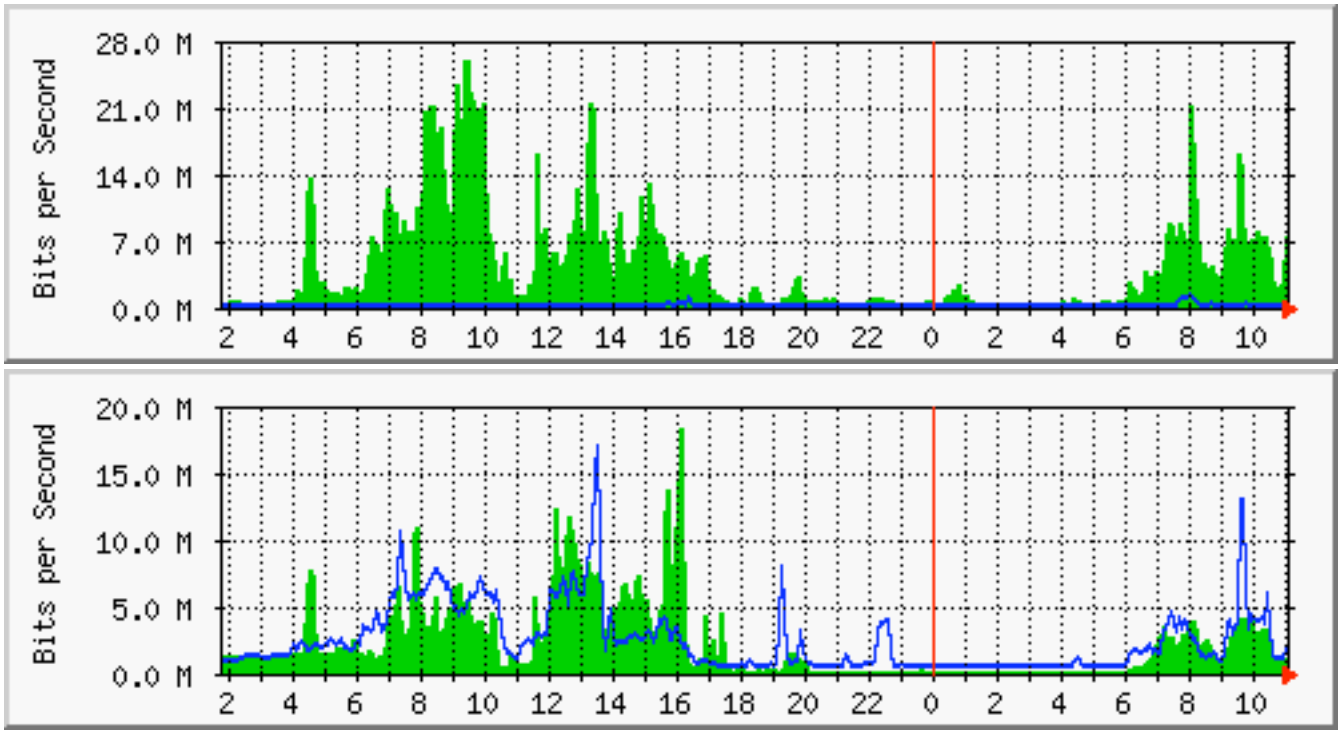


Clients per SSID and per access point

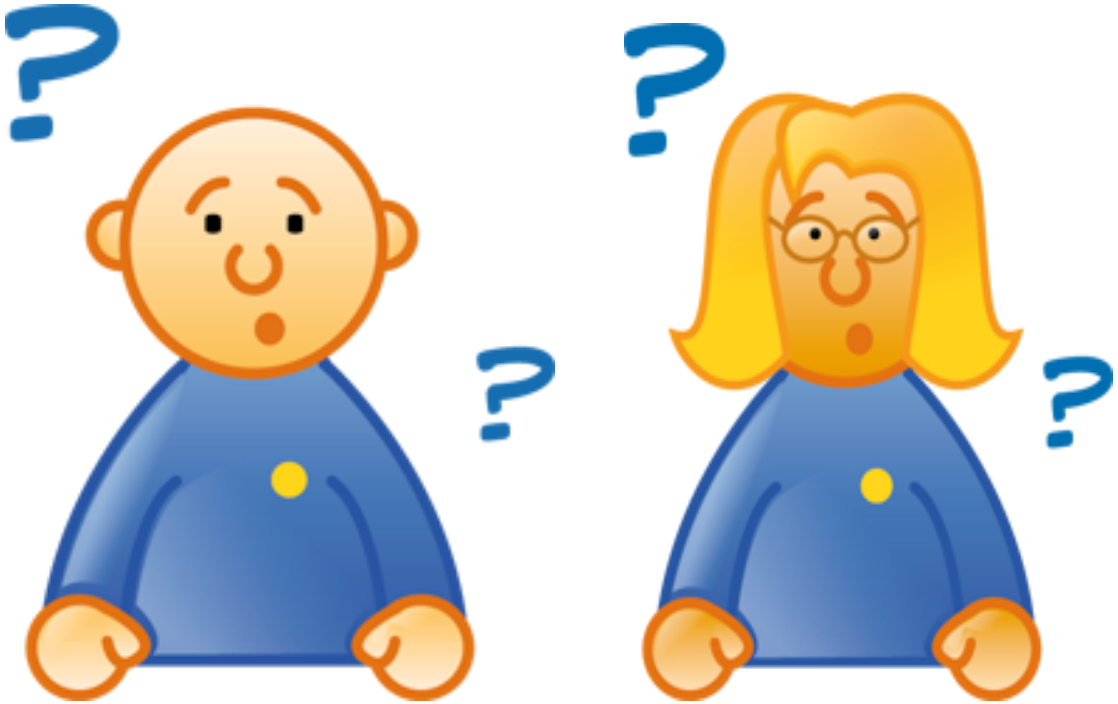




Total traffic to/from RIPE Meeting network (IPv4 + IPv6)



Peak today ~ 25 Mbps



Questions?