IPv6 at the Belgian federal level

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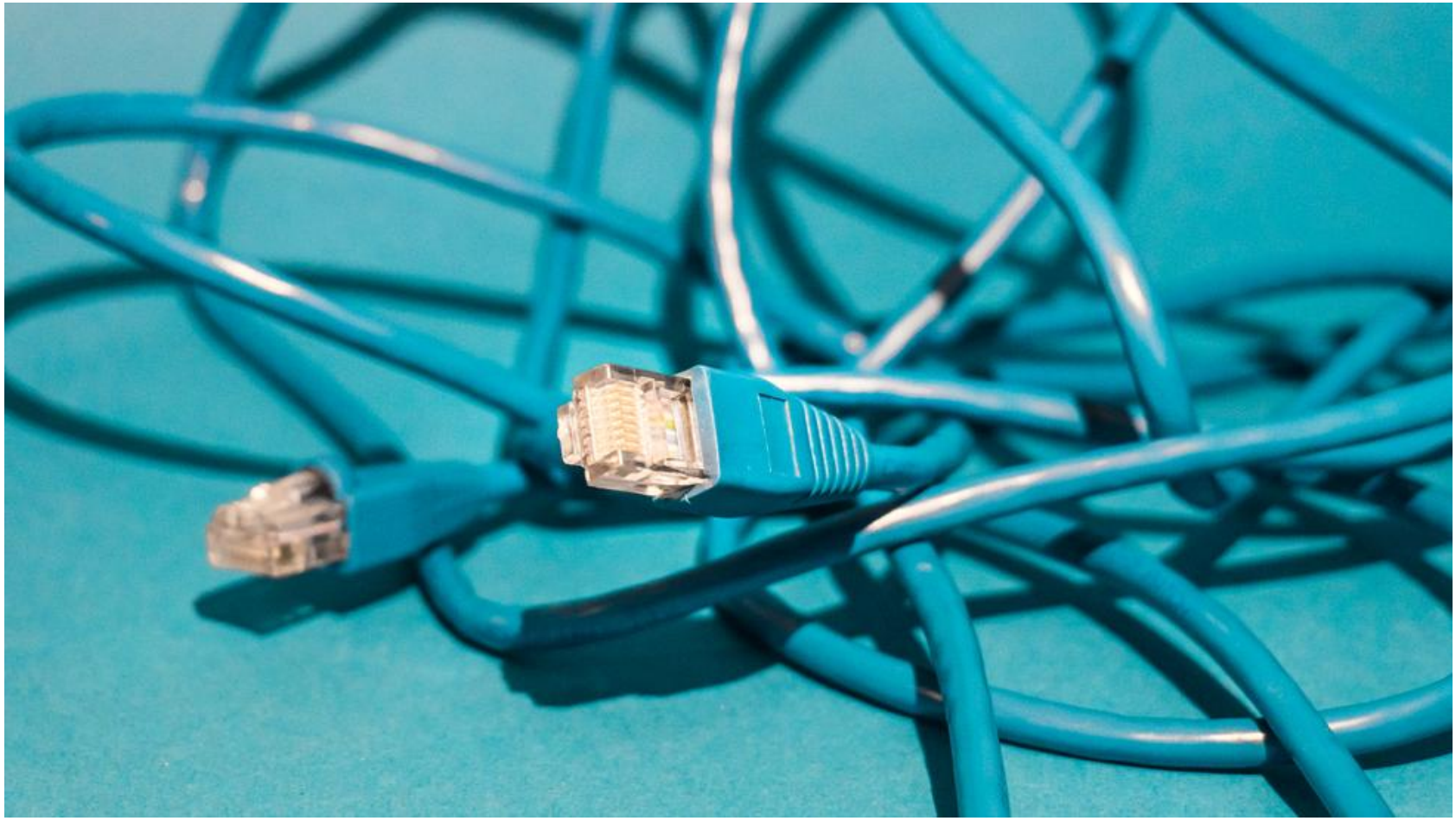
Connecting

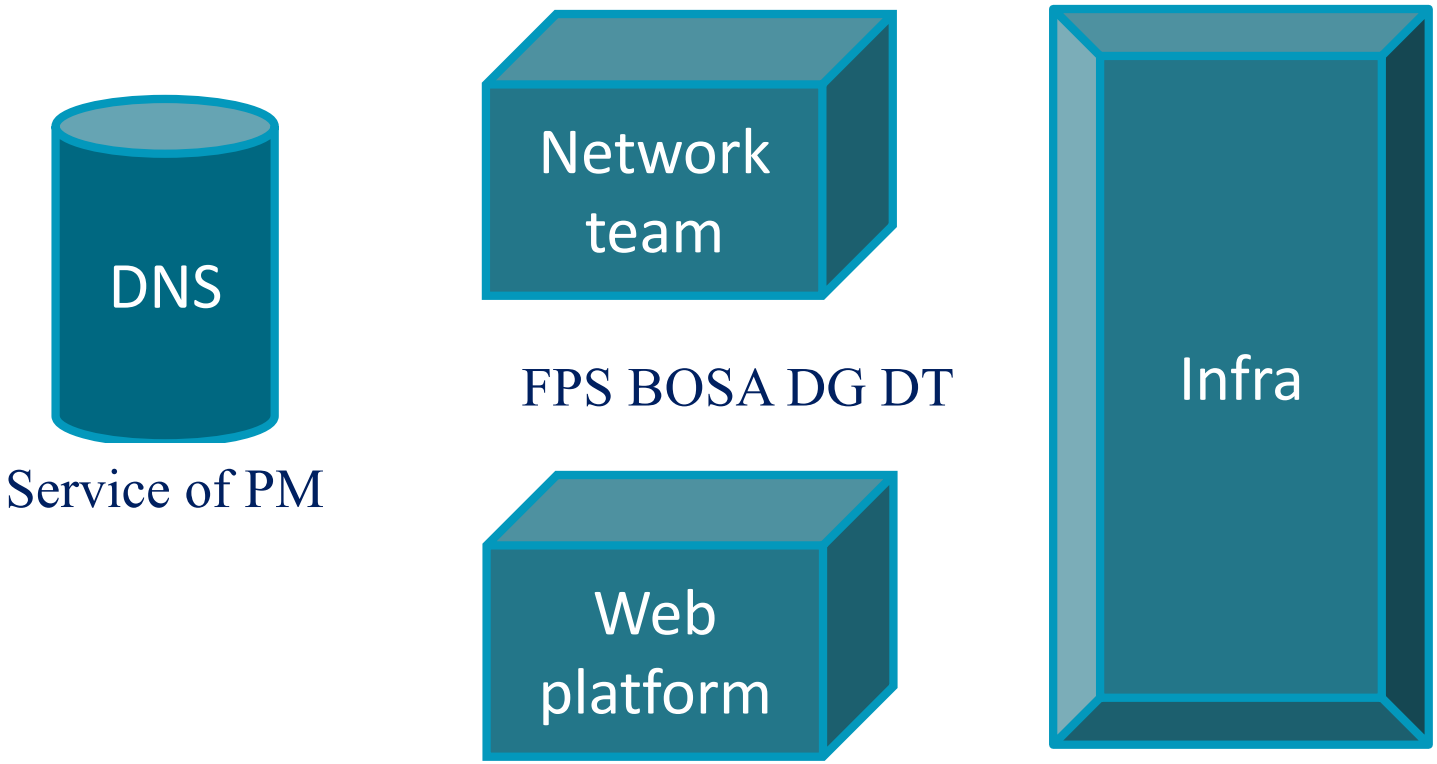


2017 - 2018

- Consolidation of many federal websites on same platform
  - “Big”Drupal for larger sites, “OpenFed” for smaller sites

    Gradually enabling IPv6 on larger federal websites
  - On edge of network, internal network stays IPv4
  - E.g. www.belgium.be, economie.fgov.be…
  - Result: +/- 30% (business hours) - 60% (holidays) IPv6
- Enabling IPv6 on smaller “key” websites
  - Monarchie.be, data.gov.be
  - Many more to follow (we have 200+ of them)

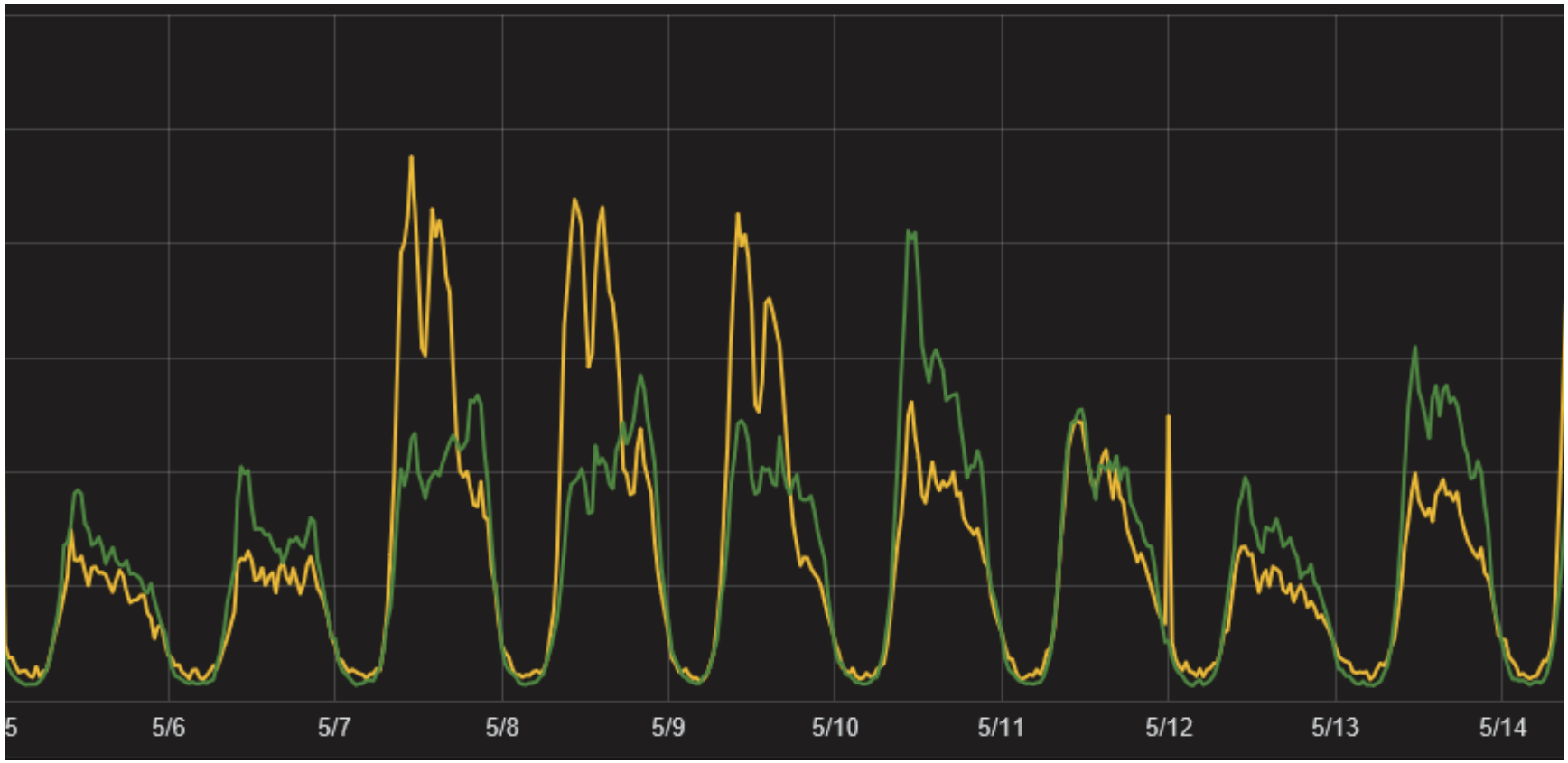
Managing sites, it can be complicated



Challenges remain largely unchanged

- Federal level still has several different datacenters
  - And different departments managing them
- IPv6 is still a “hard sell”
  - No real “end date” for IPv4
  - For many stakeholders: “just” business continuity
- Many suppliers/vendors still don’t know/care about IPv6
  - Hard to find experienced IPv6 engineers
  - Sometimes even surprised when asked to activate IPv6 as per contract

IPv6 (green) vs IPv4 (yellow) traffic



Correlation between office hours and IPv4

- Relatively more IPv6 after business hours / in weekends
  - Most office networks still use IPv4

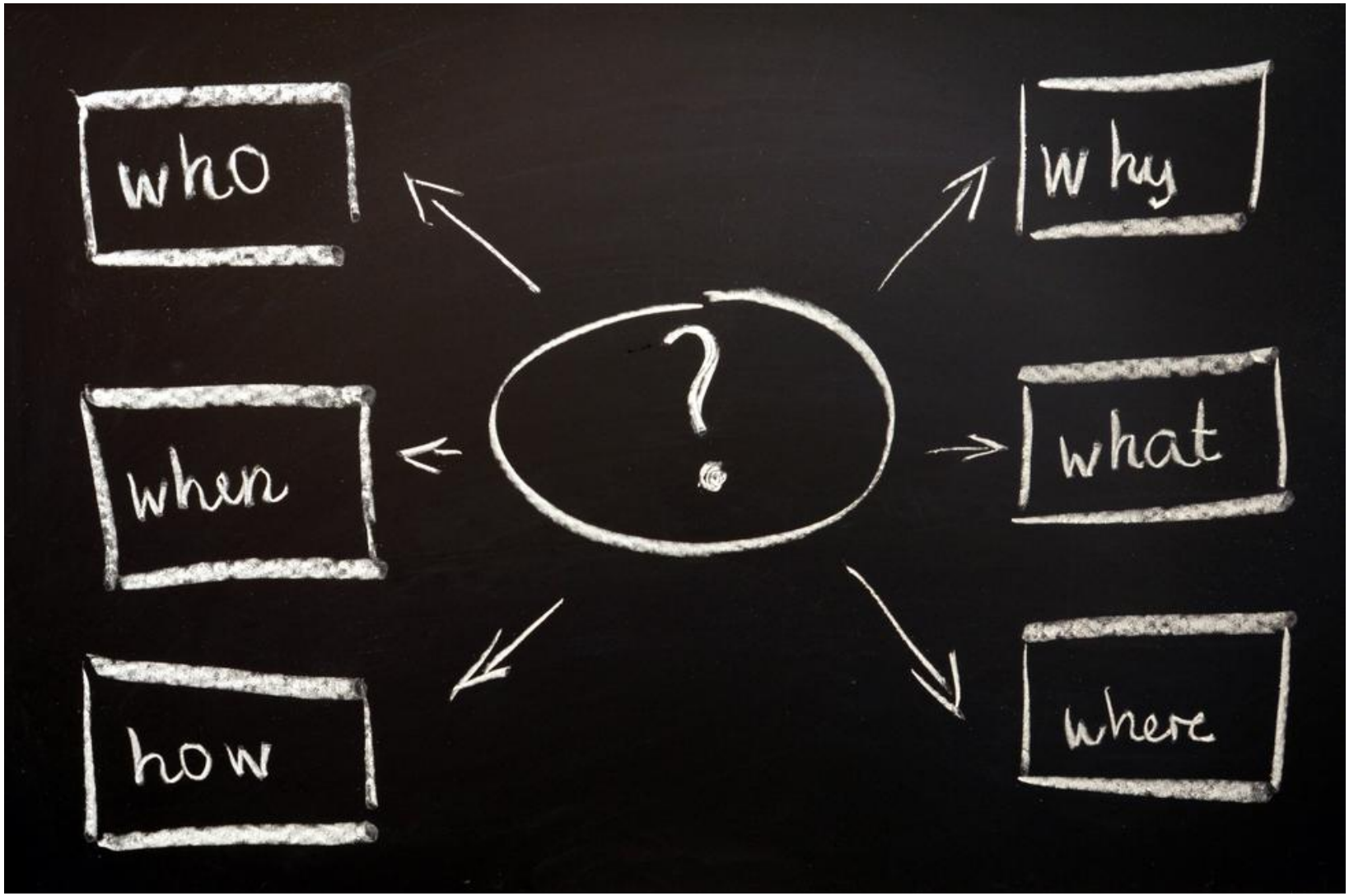
Different Happy Eyeballs implementations

- Not fully tested, but we've noticed this a few times
- Same (Debian) computer, same residential connection
  - Firefox preferred IPv4
  - Chrome preferred IPv6

Ongoing discussions and questions

- Provider Assigned vs Provider Independent range
  - Using PI from Smals address space
- Legacy IPv4 addressing vs IPv6 addressing ?
  - Often some (legacy) hierarchy/structure is used, keep it ?

Lessons learned



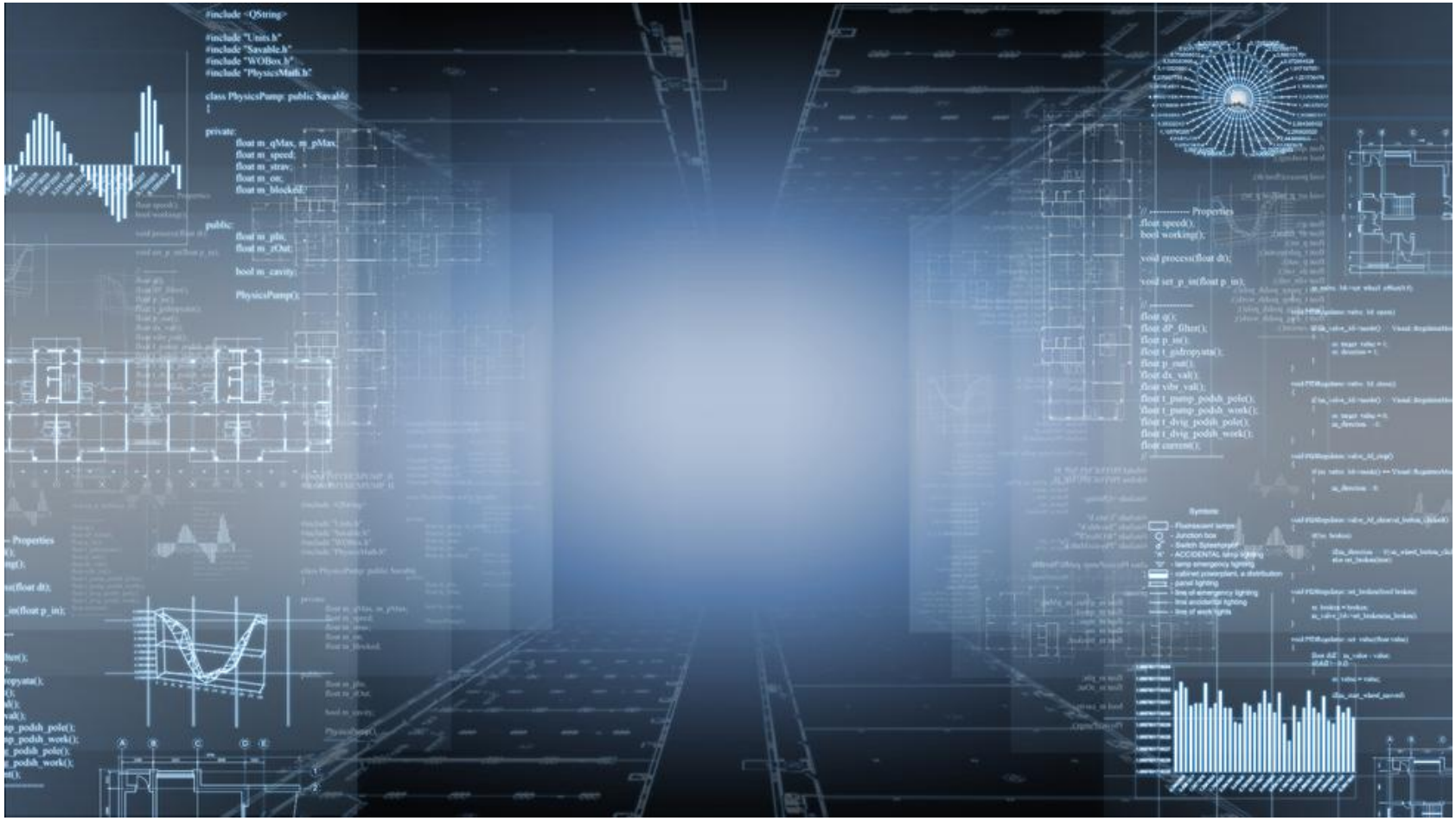
What did work

- Having (lots of) patience
  - Gradually replacing hardware and software
  - Still checking / asking suppliers to provide / enable IPv6
- Rather abstract paragraph in public tenders
  - “IPv6 must be equivalent to IPv4”
  - Avoids too much detail (changing technical specifications)
- Participation in IPv6 council meetings
  - Healthy competition + informal exchange of plans

Don’t forget about…

- Configuration and monitoring of different flows
- Many software is IPv6-enabled by default (like it or not)
- Check your scripts (may not be able to process addresses)
- Websites are often not stand-alone
    - Think Javascripts for statistics, fancy fonts via CDN, CAPTCHA
    - Payment systems, other integrations

Future plans



Government level

- Plan: provide IPv6 check as part of “website check-up”
  - Check TLS certs, cookies, accessibility, IPv6… in one overview
- Focus on non-website services
  - DNS / mail / internal web services
  - Office networks, reverse proxies (again)
  - Authentication services

Thank you

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