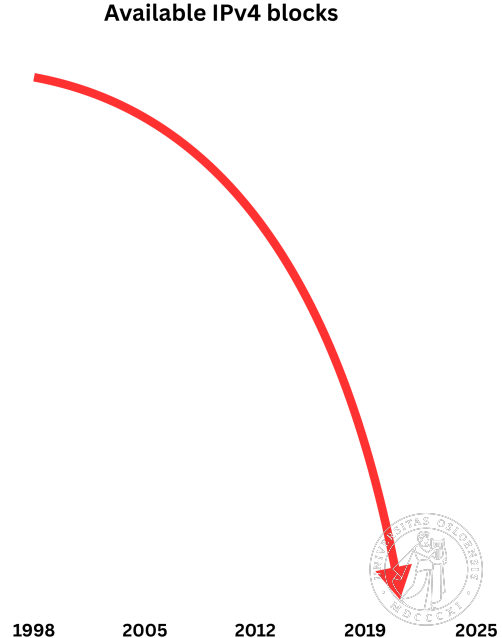
UNIVERSITETET
I OSLO

Protocol Racing

Is it really an advancement?

Joar Heimonen
contact@joar.me

October 16, 2025



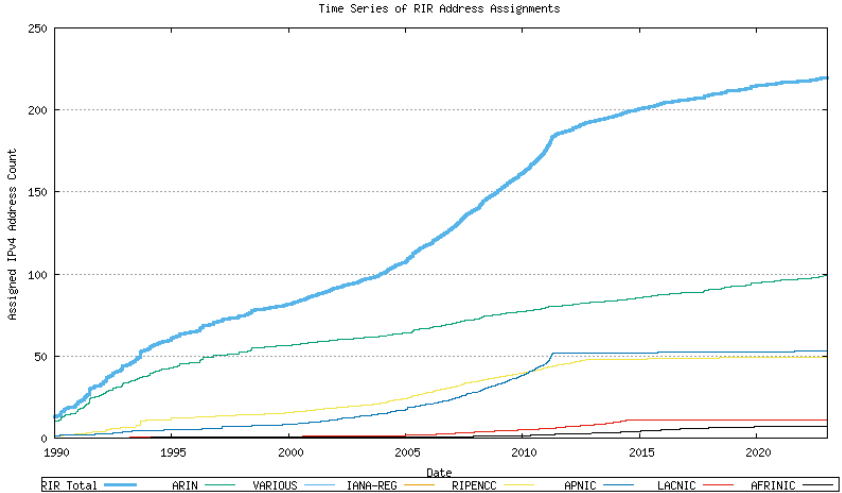
Agenda

1. A bit of history
2. Main
3. Wrap-up

IPv4

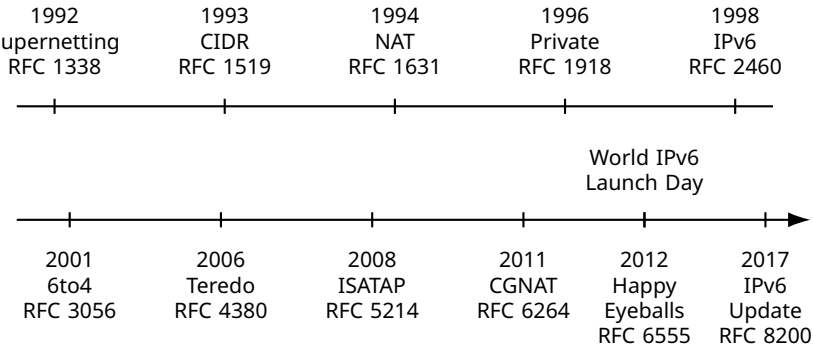
- **RFC 791** – *Internet Protocol*
- Written for DARPA in 1981 (before the IETF existed)
- Designed to interconnect different packet-switched networks (ARPANET, SATNET, university nets)
- Created under the assumption that every device would have its own globally unique, routable address
- 32-bit address space — 2^{32} = 4,294,967,296 possible addresses
- Sounds like a lot… until you remember that there are 8 billion people alive

The problem with IPv4



Source: (*IPv4 Address Report* 2025)

Timeline of stopgap measures



Timeline of stopgap measures from Supernetting (aggregation strategy) to IPv6 'v2'

It does not attempt to solve the third problem, which is of a more long-term nature, but instead endeavors to ease enough of the short to mid-term difficulties to allow the Internet to continue to function efficiently while progress is made on a longer- term solution.

(The third problem being IPv4 exhaustion)

Source: (Fuller **andothers** 1992)

Key Idea

Takeaway

Keep each slide focused on one idea.

Questions?

References I

- Fuller, V., T. Li, J. Yu **and** K. Varadhan (**june** 1992). *Supernetting: An Address Assignment and Aggregation Strategy*. techreport RFC1338. RFC Editor, RFC1338. DOI: 10.17487/rfc1338. (**urlseen** 16/10/2025).
- *IPv4 Address Report* (2025). https://ipv4.potaroo.net/. (**urlseen** 16/10/2025).

Joar Heimonen
E-post: contact@joar.me
Protocol Racing
Is it really an advancement?