PaDIS

## Provider-aided Distance Information System

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Content is King

- HTTP is again the major Internet traffic contributor
  - Carries up to 60% of Internet traffic [1]

- A limited number of CDNs carry most HTTP traffic
  - CDN Infrastructures are distributed globally
  - Content is served from all CDN locations

- Requests are dynamically re-directed via DNS
  - Choice of location is done by the CDN
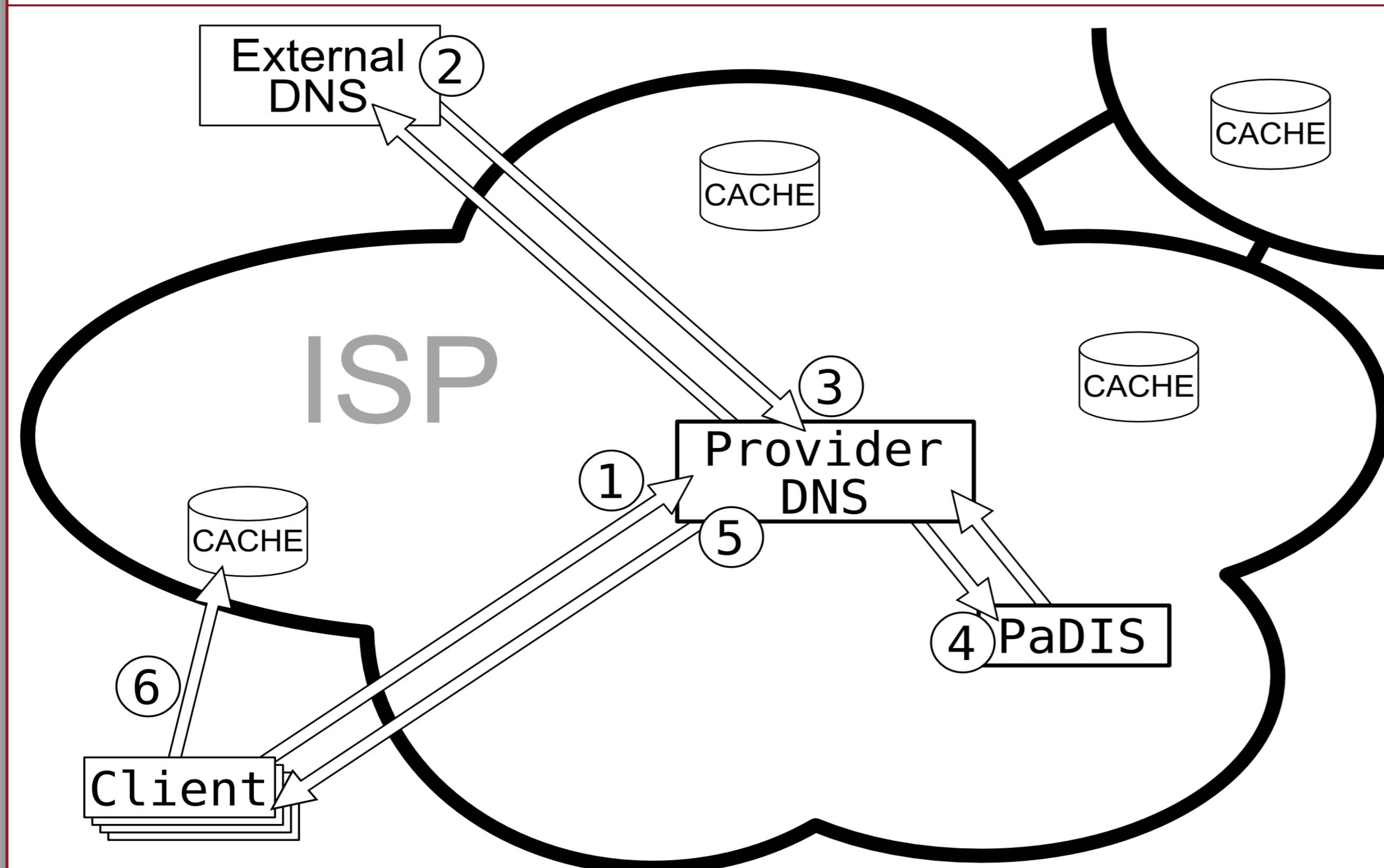 - CDN choice is unaware of ISP network topology and resources

Diversity in Content Location

Up to 70% of HTTP traffic available from 5 subnets [2]
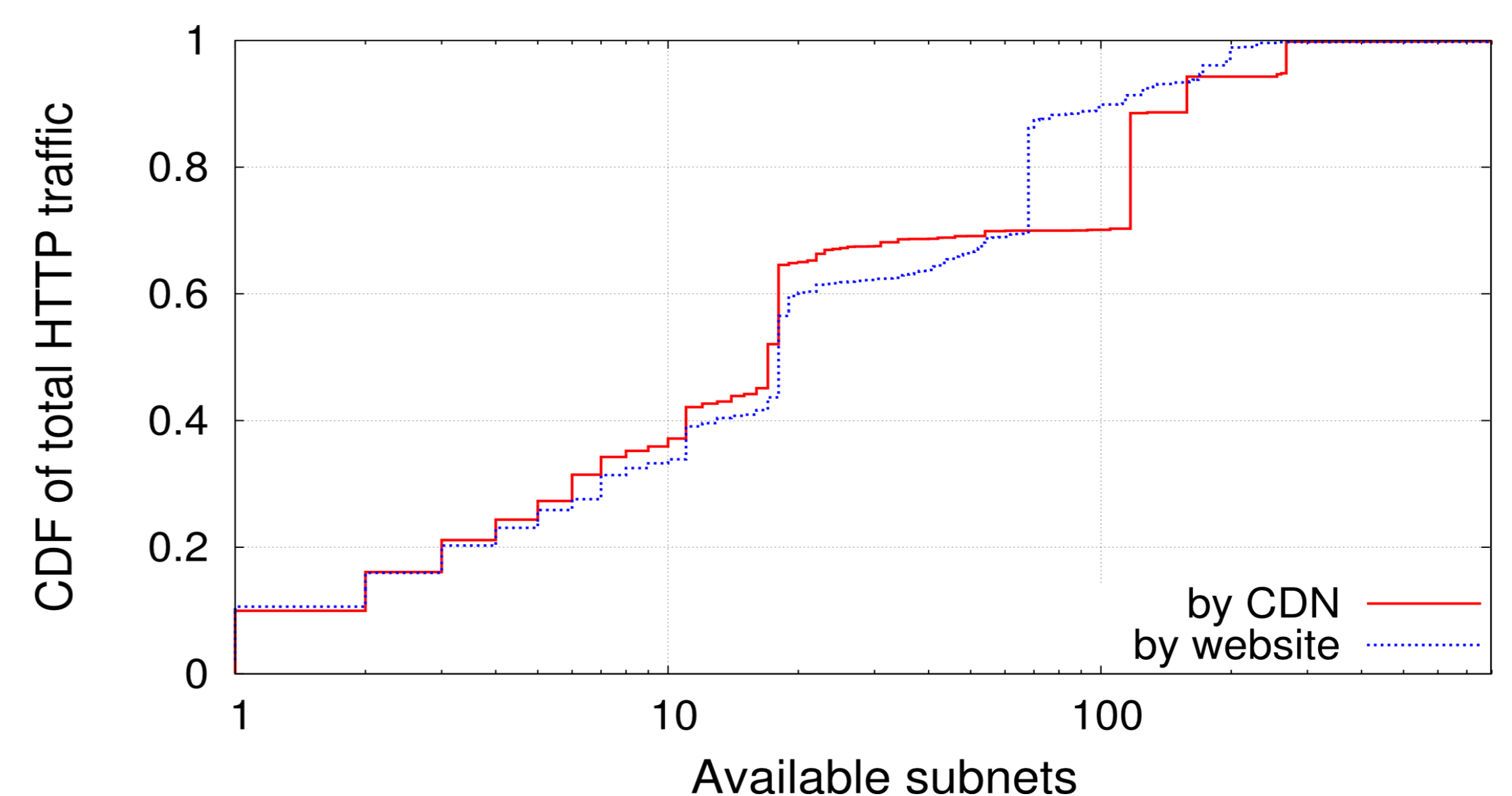
By involving the ISP in the location choice of the CDN the user experience can be improved and traffic inside the ISPs network can be balanced

PaDIS Architecture

1. A Client requests the DNS resolution of Content
2. The Provider DNS resolves the request through iterative DNS queries to authoritative DNS servers
3. The Provider DNS gets the authoritative DNS reply
4. The Reply is given to the PaDIS
   - PaDIS performs hostname aggregation
   - PaDIS reorders and/or reselects caches based on the Network status
5. The modified answer is handed back to the client
6. The client is redirected to a nearby cache

Experimental results from a CDN

- 124 subnets, all serving the same content
- 14 day measurement
- Compare CDN selection to PaDIS choice
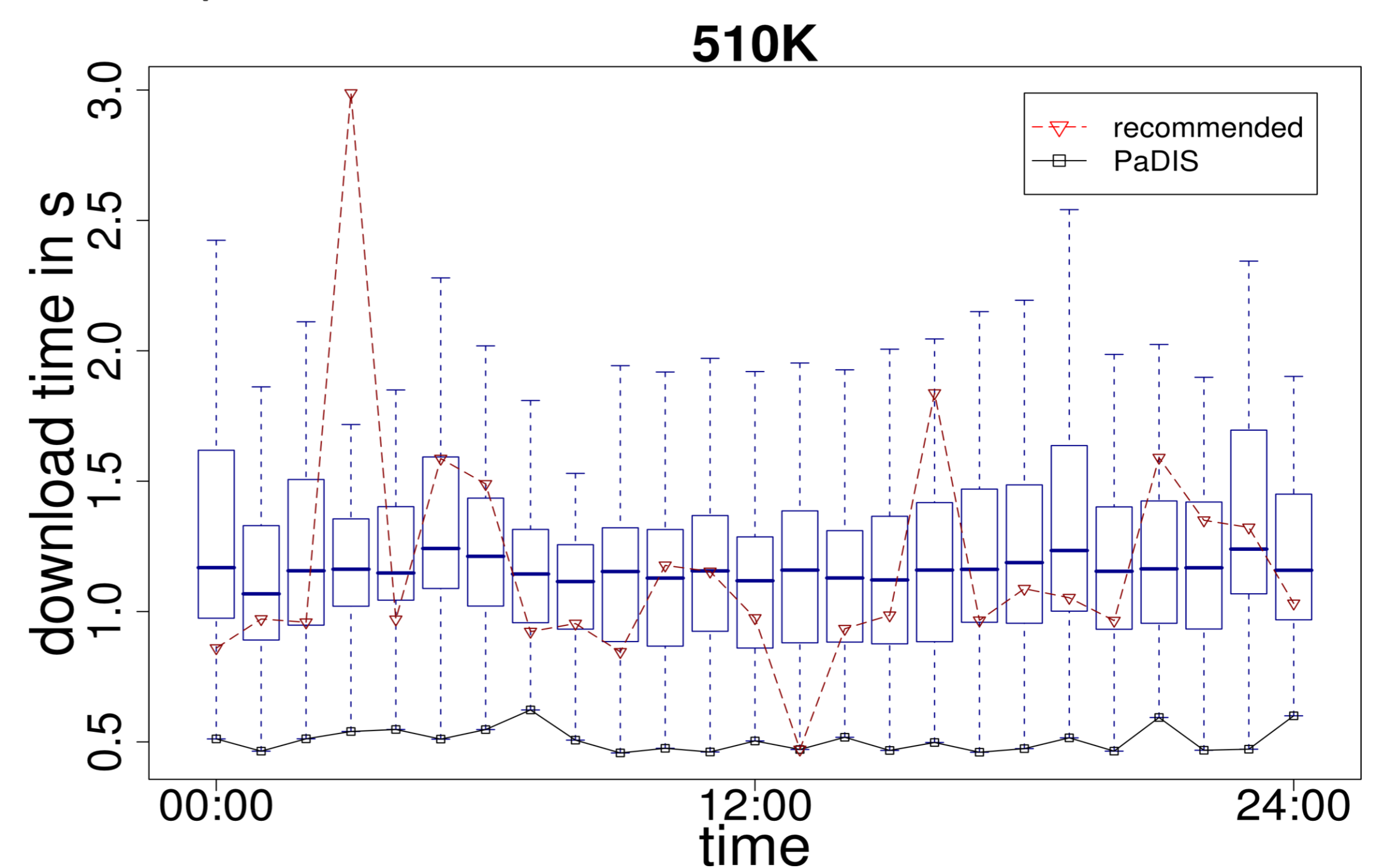
- Similar improvements for other CDNs and OCHs

Future work

- Beyond DNS/HTTP traffic
- Deployment challenges in ISP networks
- Alternative to DNS (mis)-use
- Explore traffic engineering potential

References

[1]   G. Maier, A. Feldmann, V. Paxson, and M. Allman. On Dominant Characteristics of Residential Broadband Internet Traffic. In *Proc. of ACM IMC `09*

[2]   I. Poese, B. Frank, B.Ager, G. Smaragdakis, and A. Feldmann. Improving Content Delivery using Provider-aided Distance Information. In *Proc. of ACM IMC `10*