HTTP Datagrams, UDP Proxying, and Extensible Prioritization

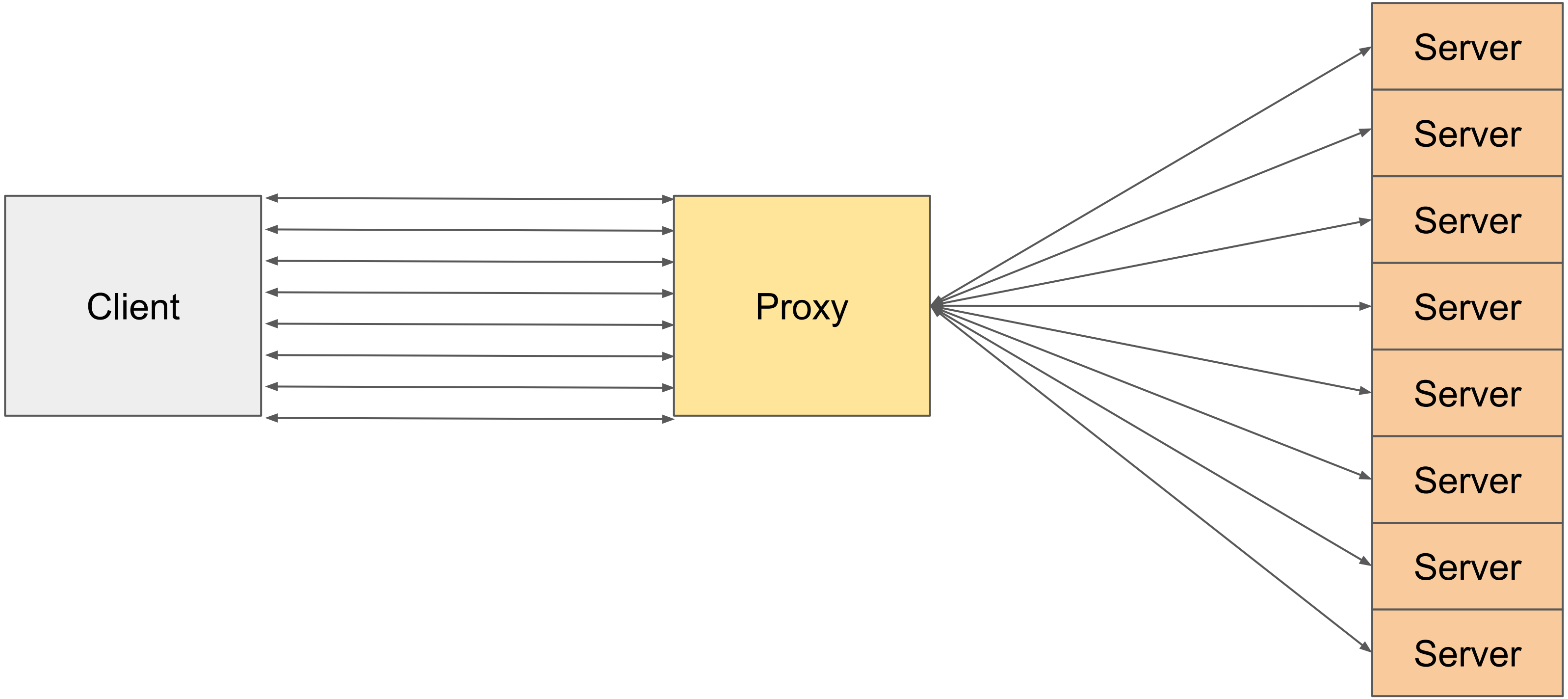
draft-pardue-masque-dgram-priority
IETF 116 – Yokohama – 2023-03

Lucas Pardue

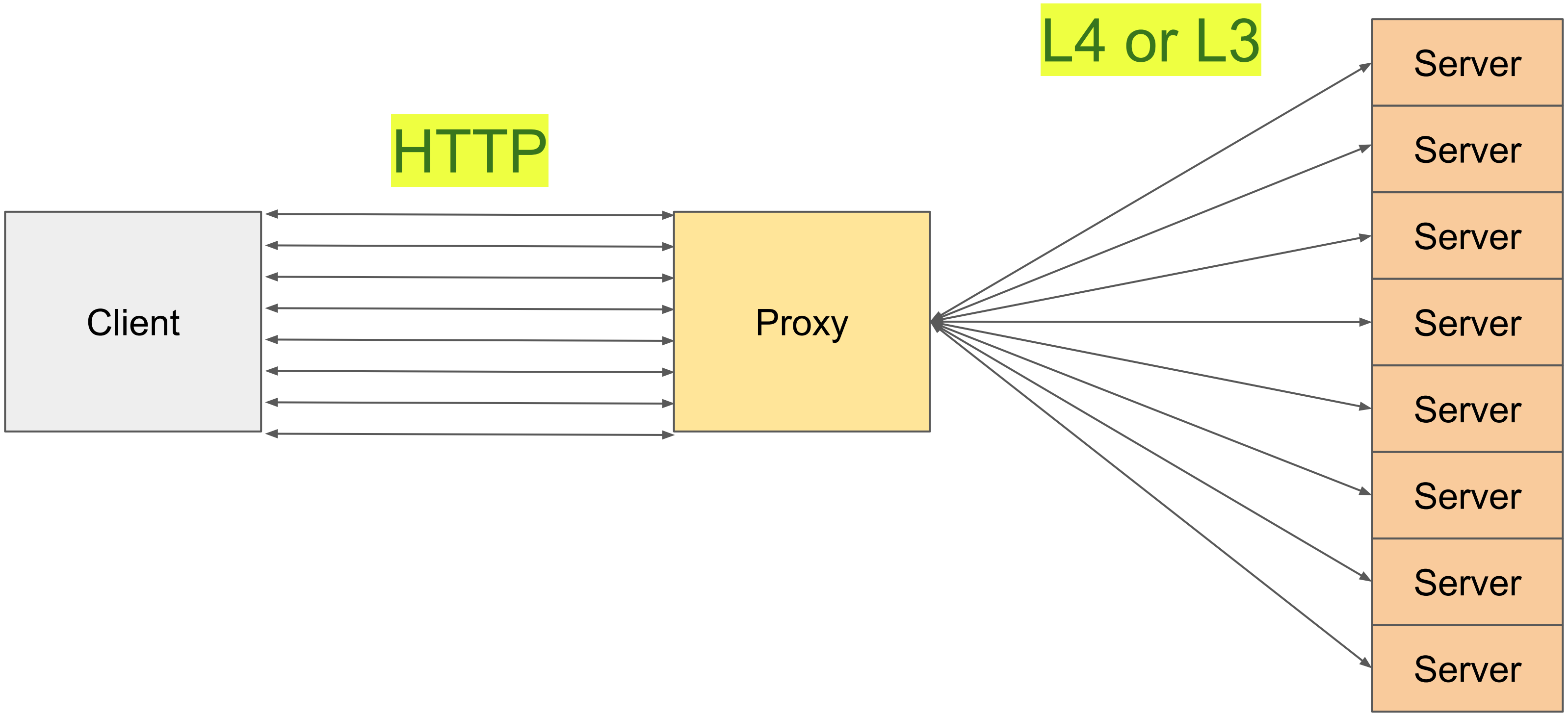
HTTP Extensible Priorities

- RFC 9218
- Priorities <=> Resource Usage
- Aka - prioritisation matters most when there are a bottleneck
- Deployment topology variation
  - Sometimes a bottleneck
  - Sometimes not

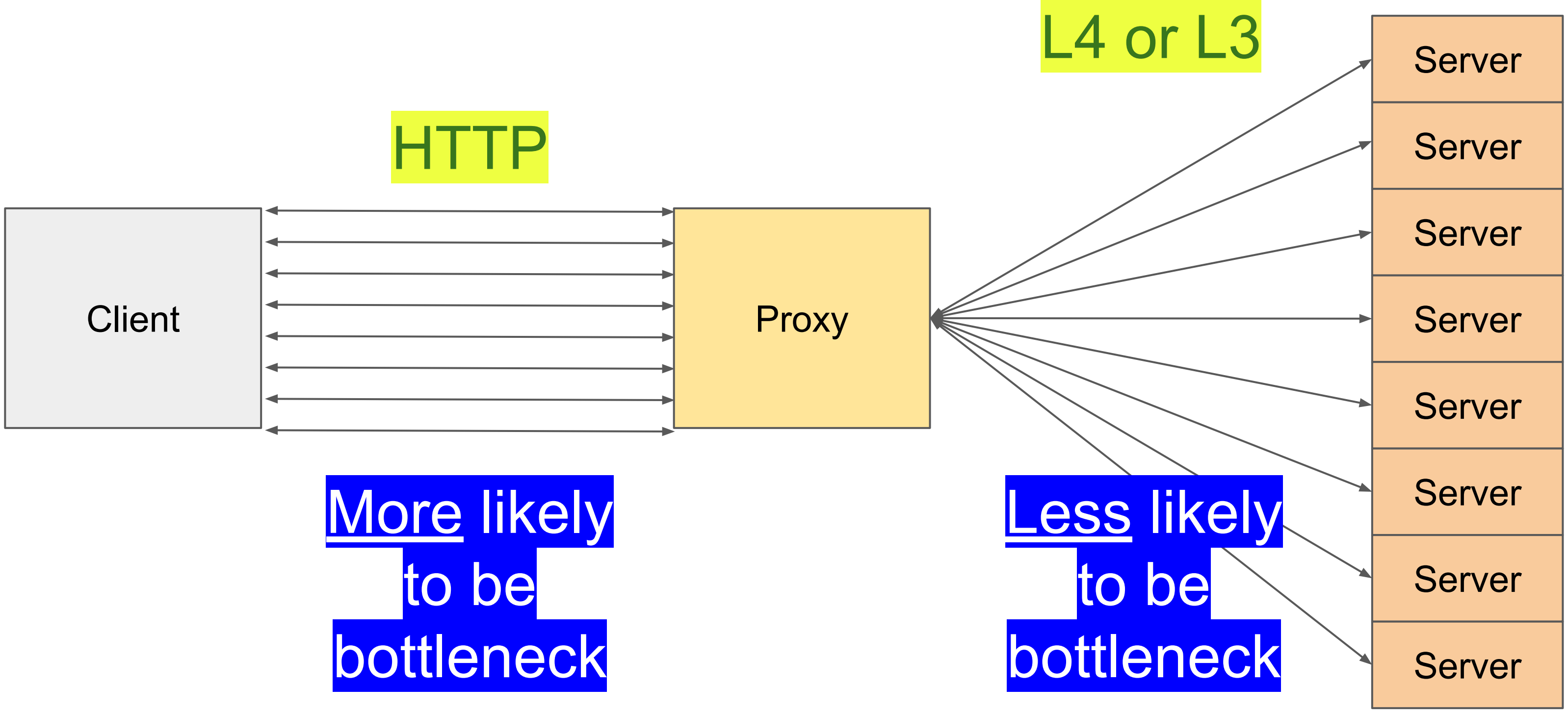
MASQUE multiplexing and bottlenecks



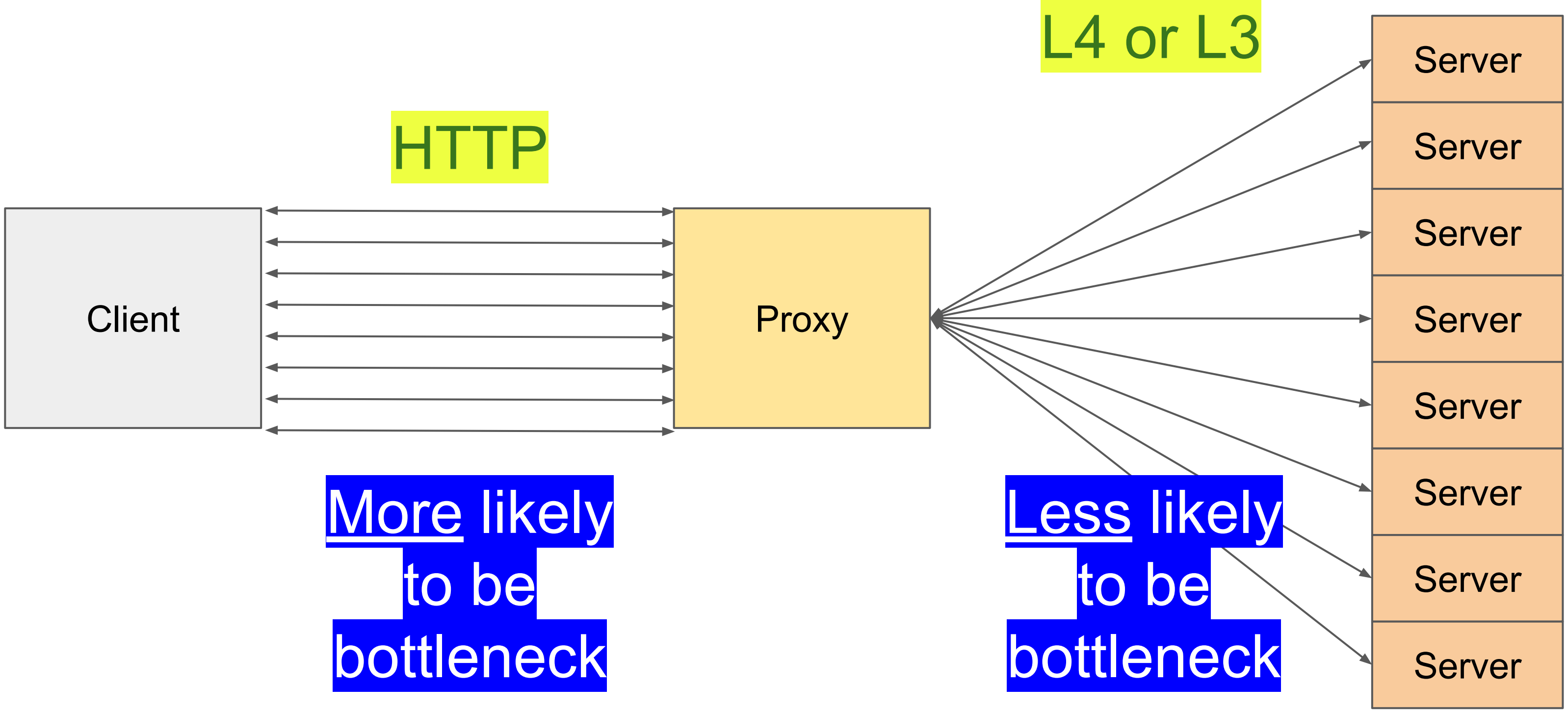
MASQUE multiplexing and bottlenecks



MASQUE multiplexing and bottlenecks



MASQUE multiplexing and bottlenecks



HTTP

L4 or L3

Client

Proxy

Server

Server

Server

Server

Server

Server

Server

Server

More likely to be bottleneck

Less likely to be bottleneck

Knows intent

Does not know intent

Scheduling and the CONNECT method

https://www.rfc-editor.org/rfc/rfc9218.html#name-scheduling-and-the-connect-

When a stream carries a CONNECT request, the scheduling guidance in this document applies to the frames on the stream. A client that issues multiple CONNECT requests can set the incremental parameter to `true`. Servers that implement the recommendations for handling of the incremental parameter (Section 10) are likely to schedule these fairly, preventing one CONNECT stream from blocking others.

Effectively shares bandwidth

Works pretty well :thumbsup:

… but CONNECT UDP doesn’t use streams

No formal means for the client to express the desired property

What works well is splicing DATAGRAMs with STREAMs

Bandwidth sharing

But implementation specific and not clear if suits client needs

Clearer problem statement:

> A client that is running multiple TCP and UDP tunnels in one connection has few tools available to mark some more important than others.
>
> Same applies to the server

We can solve this

By integrating datagram flows into the extensible priority model.

By just adding a simple parameter with some basic guidance.

draft-pardue-masque-dgram-priority

Time to do something or do nothing

Questions?