

# IPv6 Flow Label for Server Load Balancing

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# Methods of server load balancing

- DNS based – flow label not relevant
- L3/L4 load balancers route sessions to individual servers, or to:
  - Layer 7 (HTTP) proxies in front of servers
  - TLS proxies in front of servers
  - All these are cognizant of transport sessions, so are candidates to examine the flow label

# Maximum scenario

IPv6 Clients in the Internet

Diagram inspired  
by Willy Tarreau

Ingress router

L3/L4 balancer

Hot

Spare

L3/L4 balancer

HTTP proxy

...

HTTP proxy

TLS proxy

...

TLS proxy

HTTP  
server

HTTP  
server

HTTP  
server

HTTP  
server

HTTP  
server

...

# Why the flow label may be useful

- {source address, destination address, flow label} could stand in for {source address, destination address, protocol, source port, destination port} to identify a transport session.
- The flow label is immediately available regardless of extension headers – more efficient, especially for L3/L4 ASICs.
  - Also available for TLS and HTTP proxies, but they have to decode the TCP header anyway.

# Who sets the label?

- According to RFC 6437, the flow label SHOULD be set to a suitable (uniformly distributed) value at or near the source.
- Until that becomes general practice, a site using it for server load balancing will need to set the label, as permitted by RFC 6437, in an ingress router.
  - Nett cost will not be greater since *either* the ingress router *or* the L3/L4 balancer will have to walk the extension header chain.

# Questions?

- Is this something the IETF should document?