Dataset Coverage

Deployed MCA on 4 different cloud providers
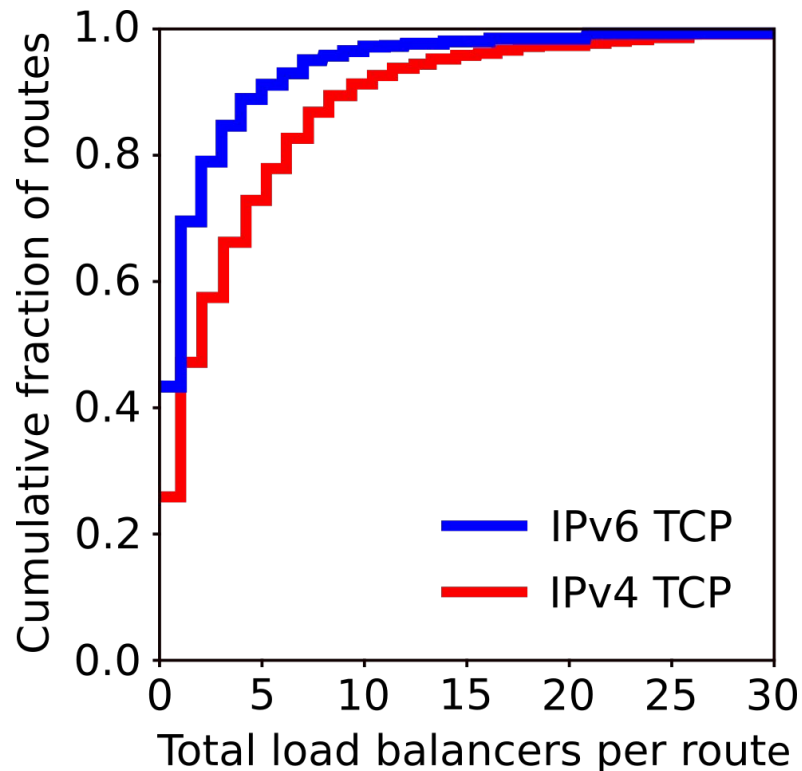
○ 31 vantage points in 5 continents

Dataset Coverage

Deployed MCA on 4 different cloud providers

- 31 vantage points in 5 continents
- MCA measurements to
  - 19866 IPv4 destinations: coverage of 4388 ASes
  - 16674 IPv6 destinations: coverage of 8103 ASes
- 2.7 million MCA measurements total

Load Balancing is Prevalent

75% of the IPv4 routes traverse at least one load balancer (56% of IPv6 routes).

Some routes have 10+ load balancers.

Classes of Load Balancing

Class	Header Fields
Per-flow	IP addresses and ports
Per-dest	IP addresses
Per-packet	Contents of packet header ignored, forwarded to a random next hop

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Per-flow	IP addresses and ports
Per-dest	IP addresses
Per-packet	Contents of packet header ignored, forwarded to a random next hop
Per-app	TCP and UDP ports
v6 flow label	Any class (other than per-packet), but also using the IPv6 flow label field
Other	Load balancers considering other flow identifiers

Classes of Load Balancing

	IPv4			IPv6		
	UDP	**TCP**	**ICMP**	**UDP**	**TCP**	**ICMP**
Per-flow						
Per-dest						
Per-packet						
Per-app						
v6 flow label						
Other						

Classes of Load Balancing

	IPv4			IPv6		
	UDP	**TCP**	**ICMP**	**UDP**	**TCP**	**ICMP**
Per-flow	69.6%	69.8%	1.5%	77.6%	78.5%	0.3%
Per-dest	24.4%	24.1%	94.2%	13.3%	13.5%	90.1%
Per-packet						
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Per-packet	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%
Per-app						
v6 flow label						
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Per-packet	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%
Per-app	1.8%	2.1%	0.0%	0.9%	0.8%	0.0%
v6 flow label						
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Per-packet	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%
Per-app	1.8%	2.1%	0.0%	0.9%	0.8%	0.0%
v6 flow label	-	-	-	3.1%	2.7%	3.2%
Other	2.3%	2.6%	2.7%	3.2%	2.8%	3.9%