

Experimental results: DSCP 42/2

Ana Custura <ana@erg.abdn.ac.uk>
University of Aberdeen, UK

Datasets

- CAIDA Passive traces at IXP, years 2018 and 2019
- RIPE Atlas IPv4 traceroute run to a known transparent network (n=957 probes); target UoA server with no remarking.
 - **DSCP 42 -> DSCP 2**
 - DSCP 44 (VA) -> DSCP 4
 - DSCP 46 (EF) -> DSCP 6
 - DSCP 45 (EF) -> DSCP 5

...all map to AC_VI and can be aggregated with other NQB-compatible traffic

CAIDA Passive Traces

- Traffic recorded during 1 hour in January at Equinox DC in NY
- OC192 backbone link (9953 Mbps) of a Tier 1 ISP between NY and Sao Paulo
- Traffic is bidirectional and anonymized preserving prefixes
- We looked at DSCP markings

	2018	2019
IPv4 Packets	9,568,663,467	9,937,877,712
IPv6 Packets	316,007,533	234,393,206
TCP/UDP split	79 / 19 (2% other traffic)	73 / 24 (3% other traffic)

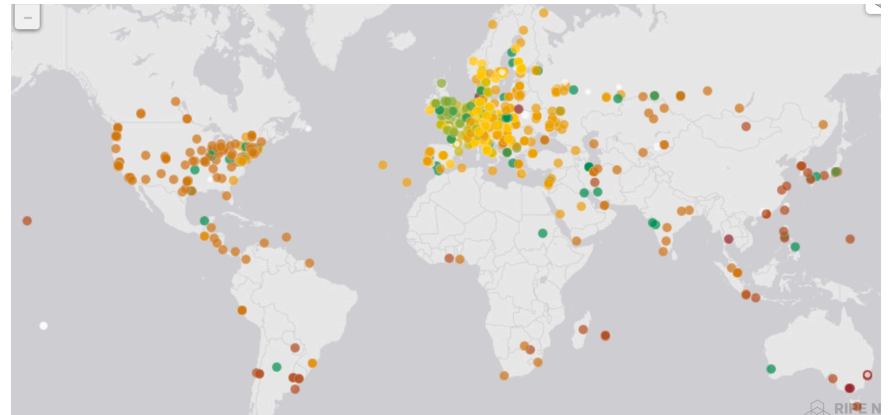
CAIDA Passive Traces

	2018 - Dir A	2018 - Dir B	2019 - Dir A	2019 - Dir B
All packets Per direction and year	BE: 91% 42, 44, 46: < 0.01% 2: 7% 6: 0.5% 4: 0.3% 5: 0.1%	BE: 79% 42: < 0.01% 2: 15% 5: 3.8% 4: 0.4% 6: 0.1%	BE: 78% 42: < 0.01% 2: 19% 4: 0.2% 5: 0.2% 6: 0.3%	BE: 81% 42: < 0.01% 2: 13% 5: 4.9% 4: 0.3% 6: 0.1%
	2018 - IPv4	2018 - IPv6	2019 - IPv4	2019 - IPv6
All packets Per protocol	BE: 82% 42, 44, 46: <=0.01% 2: 13% 5: 3% 4: 0.4% 6: 0.2%	BE: 90% 42, 44, 46: <0.01% 2: 7% 5: 0.03% 4: < 0.01% 6: < 0.01%	BE: 79% 42, 44, 46: <0.01% 2: 14% 5: 3.6% 4: 0.2% 6: 0.2%	BE: 94% 42, 44, 46: <0.01% 2: 4% 4: < 0.01% 5: < 0.01% 6: < 0.01%

- Traffic w/DSCP 42 accounts for < 0.01%, consistent across direction, year and IP version split.
- Traffic w/DSCP 2 accounts for ~4-19%, present across direction, year and IP version split.
- Other DSCPs (4, 5, 6) not seen as much, with the exception of DSCP 5 in Dir B

RIPE Atlas traceroutes

- DSCP set to '0x2A' (DSCP 42, ECN 00) - byte A8
- Each traceroute repeated 3 times
- TCP traceroute to port 8080 at UoA server, Feb 2021
- ~1000 probes, many in edge networks



	Traversed unchanged (42)	ToS Bleach (2)	Bleach to CS0 (0)	Reset to CS5 (40)	Other
At endpoint (n=890)	19.6%	7%	62.8%	3.3%	7.3%
At first hop (n=802)	94.2%	0%	5%	0.2%	0.6%

Conclusion

- Traffic marked 2 accounts for ~4-19% of traffic...not just a single network
- In the Internet core, 42 has a 40% traversal rate, 2 has double that
- **ToS Bleaching on AF21, AF31, AF41**
- **What does this mean for the NQB DSCP?**

Considerations for assigning new DiffServ Codepoints

- Please read: <https://datatracker.ietf.org/doc/draft-custura-tsvwg-dscp-considerations/>

Abstract:

This document discusses the considerations for assigning new DiffServ Code Points (DCSPs). It considers the common remarking behaviours that the Diffserv field might be subjected to along an Internet path. It also notes some implications of using a specific DSCP.

We are looking to revise this soon.

- **Any comments and contributions welcome!**
- **Will TSVWG be interested in adopting such a draft?**

Questions