Multipath Detection with RIPE Atlas
a.k.a. can’t we just use RIPE Atlas for this?
Paris Traceroute on Atlas

- API docs:

  which the TTL reaches this value,
  
  paris (integer): The number of paris traceroute variations to try. Zero disables paris traceroute. Value must be between 0 and 64,
  
  size (integer): size of the data part of

- default: 16
Paris Traceroute on Atlas

- Atlas can cycle through $[0 .. 64]$ distinct flow IDs
- Modifies:
  - destination port field in UDP
  - checksum field in ICMP
- Of course a measurement can define an address family (4/6) and transport (ICMP, UDP, TCP)
Regardless...

- Multipath observations on Atlas?
- Rough comparison:
  - Choosing targets to match Kevin’s measurements
  - Using an Atlas probe within a matching ASN as above
  - What do we see?
Apples to Apples part I

- From: probe 6278
- To: 125.155.82.17
- Full cycle of flow IDs
- UDP transport
probe 6278 -> 31.13.64.6

• UDP: 91 IPs in path observed, 165 edges
  - ~80% of the IPs without being smart
  - ~20-25% of edges

• No alias resolution etc

• 4600 traceroute probes sent

• [ICMP sees fewer of the above]
Apples to Apples part II

- From: probe 6278
- To: 31.13.64.6
- Full cycle of flow IDs
- UDP transport
probe 6278 -> 125.155.82.17

- UDP: 87 IPs in path observed, 147 edges
  - ~72% of the IPs
  - ~20% of the edges

- 2900 traceroute probes sent

- [ICMP sees a straight line]
Shortcomings

- Current implementation is slow to iterate
- Can iterate measurements to get pretty far with the Atlas API, but it’s a lot of *work*
- We cycle through a small set of flow IDs, with no configuration for other fields to modify
Shortcomings

• No smarts built-in to avoid repeatedly measuring hops with only one link
• You can throw away your statistical guarantees
• Finally, 70% of Atlas platform is behind a NAT
Ongoing

- Investigating more structured approaches to performing multipath detection with Atlas
- Expand the set of paris IDs available
- … up to a smarter MDA measurement type?
Q