Performance Implications of PATH Characteristics

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"Performance Implications of PATH Characteristics"

- Spencer was interested in revisiting the PILC experience
  - The IETF made recommendations for subnetwork designers 1997-2004
  - The Internet may have changed somewhat in the last 15 years
  - Spencer held side meeting at IETF 104 to gauge interest
  - Notes sent to PANRG mailing list
- Side meeting at IETF 105 to identify recommendations for IETF
  - Publicized to PANRG mailing list
  - "Are there recommendations we're ready for the IETF to consider?"
  - Held Wednesday morning
  - I have good news, and bad news

The Good News

- Smart people showed up to help identify what's not research now
  - Anna Brunstrom
  - C Lu
  - Gorry Fairhurst
  - John Border
  - Lars Eggert
  - Markku Kojo
  - Michael Welzl
  - Spencer Dawkins
  - Tom Herbert

The Bad News

- Almost everything is still research (oh, nooos!)
- "What could we tell QUIC transport protocol designers?" - ummm ...
- So, I'll be back to talk about PIPC when we have recommendations
- But the discussion was extremely relevant to PANRG. So let's talk.

What follows is Spencer's take on yesterday's conversation

Corrections and rebuttals are welcome, of course, here or on-list

So, what happened, was ...

Why not do PIPC in PANRG?

- What I'm hoping for, is recommendations for transport designers
- If this stuff is engineering, it's not research, so not PANRG ...
- These might be BCPs, and only IETF stream publishes BCPs
- At minimum, we'd like review within the IETF before publishing them

Paths exist - but they may change

- Actually explaining "paths" may be helpful, all on its own
- We noodled about whether all parts of a path are equal
  - "equal" in usefulness, or "equal" in trustworthiness? (but keep reading)
  - Access networks and core networks
  - We DO have trust relationships with SOME networks - does that help?
  - There are use cases like "wifi+satellite" with multiple interesting networks
  - Trusting a network, or trusting THE network? (world wide Internet)
  - First-hop networks are last-hop for the other host - info sharing possible?
- *<Insert advertisement for draft-enghardt-panrg-path-properties here>*

Hints, not directives

- We DO use hints now - like ECN. What other hints are possible?
- One idea - look at IP TTL changes. Any information there?
- I promise that people like LOOPS are thinking about delay as a hint
- We THINK hints are likely to be less disastrous than directives
- We're not sure they are always harmless - pretty sure that's not true
- Tell hosts "here's path info, you should Do The Right Thing"?

"Trust No One. Literally No One"

- Some application protocol designers don't want to trust anything
- "Signals from the network? How about no SRC/DEST addresses?"
- We're providing transport services to those protocol designers, too
- We're using TLS, which is inherently two-party
- "Host == Network == Host" is not two-party. Are we dead yet?"
- Anything we can do to minimize trust requirements MIGHT help

Other Thoughts

- Is IRTFOPEN Chronos NTP hardening a useful model for us?
- "Why transport encryption is harmful" docs, in various forms
- PILC worked on analysis, **then** on recommendations - should we?
- We need to remember APIs - languages like RUST hide ECN, etc.
- We hear other footsteps - APP6, TEAS, and likely others
- Communication is almost always a Good Thing

Please Discuss