shim6: what now?

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Are we done?

- Close to publication:
  - HBA: ✔
  - Proto: ✔
  - REAP: ✔
- That's it?

Not quite

- Still unaddressed:

  - ingress filtering

  - "initial failures"

  - traffic engineering

  - proxy implementation

Ingress filtering

- We have:

  - an ICMPv6 "wrong source addr" message

  - Marcelo Bagnulo's/Christian Huitema's old drafts about tunnels to egress router

- We don't have:

  - source address dependent routing

  - address rewriting in routers

Ingress filtering (2)

- Without something for this, shim6 doesn't work in practice!

- So:

  - write down what we know

  - or do more?

"Initial failures"

- When a site has multiple locators

- We pick the wrong one initially

- Solve this:

  - we don't: apps try different addresses?

  - mapping mechanism?

  - reachability detection?

Traffic engineering

- Two issues:
  - do it in the first place
  - centralized control of TE
- Do we need extra protocols?
- Use the DNS?

Proxy shim6

- Makes for easy shim6 deployment

- Enterprises like central control

- Easier to do traffic engineering

Rewriting in routers

- Attractive:
  - solves ingress filtering
  - get hint for free
- Quantum behavior of addresses: can change it as long as nobody has looked at it
- But: some packets may be rewritten, not others
- Unless.... we do NAT

NAT

- NAT is bad
- Bad NAT is much worse than less bad NAT
  - In IPv6 no need to overload ports
  - 1-to-1 NAT: incoming sessions work

NAT (2)

- Can compensate for checksum difference when rewriting address:
  - works with TCP, UDP, ICMPv6, DCCP
  - RTP: no checksum (but on UDP usually)
  - SCTP: CRC32, but not over address
- So all (?) protocols work **statelessly**
- Referrals and path changes still break, though

NAT (3)

- NAT allows for easy proxy shim6

- Do 1-to-1 NAT grudgingly rather than end up with port overloading NAT?

Flame away!