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 allows for easy proxy shim

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