RFC3484 & shim

draft-arifumi-ipv6-policy-dist-00.txt
draft-fujisaki-dhc-addr-select-opt-01.txt

Arifumi Matsumoto
NTT Information Sharing Platform Labs.
Initial Contact Is Important

• Initial contact must succeed if we use deferred shim context setup.
• Even if the corresponding host isn’t shim-enabled, initial contact should succeed.
  – This is necessary for deployment
  – You can’t re-write addresses at mid-path routers.
• Long connect loop in initial contact annoys users.

• What can we do for initial contact issues?
Initial Contact Failure Reasons

1. Network outage somewhere in network
   - Dynamic problem.

2. Ingress Filtering
   - Rather static problem.

3. ISP and Closed-Network multihome environment
   - Static problem.
   - Deployed rapidly in Japan
   - You can’t implement a large SP with ULA.
Address Selection Policy for initial contact

- xSP distributes Address Selection Policy to its customers
  - Ingress Filtering(2) can be solved if GW converts policy into routing table or does src address routing.
  - Closed Network problem(3) can be solved.

ISP-B \rightarrow Customer Router
“For Dst=B::/32 and Dst=::/0 use delegated Src=B::/48”

ISP-B \rightarrow Customer Router
”For Dst=A::/32, use delegated Src=A::/48”

SP-A \rightarrow Customer Router
“For Dst=A::/32, use delegated Src=A::/48”

GW
DHCPv6 or RA

ISP-B
ISP-A

SP-A

DHCP-PD
(A::/48)

DHCP-PD
(B::/48)

Internet
::/0

Host

A::/32
B::/32

Host

A::/64
B::/64

::/0

B::/64

Router \rightarrow End-nodes policy:
For these Dst, Use this Src.
A::/32 A::/64
B::/32 B::/64
::/0 B::/64

draft-arifumi-ipv6-policy-dist-00.txt
draft-fujisaki-dhc-addr-select-opt-01.txt
Redundancy for initial contact

• **An Application should cycle dst & src.**
  – An application needs ordered list of src addrs.
  – RFC3484 can choose better address first if policy is given.
  – How about a **hack for getaddrinfo()**
    • Returns dst & src pair, like:
      dst1(fl=1),dst1(fl=2),dst2(fl=1),dst2(fl=2),… fl=flowlabel
    • `connect(dst1(fl=1));` binds src1
      `connect(dst1(fl=2));` binds src2
    • No need to modify applications if not statically linked.
    • Limit the number of src-dst pairs for usability ?
      – Only the addrs on the outgoing IF can be candidates ?
TE for initial contact

• Outgoing TE (client side)
  – Depends on src addr selection
  – Better traffic control will be possible if policy table has **Preference** field also for src addr.
    • Or **DNS SRV** record like field

• Incoming TE (server side)
  – By DNS SRV record
Summary

• In shim, RFC3484 is usable, but not enough for redundancy and TE.
• Policy distribution (or its modification) is necessary.
  – For network specific address selectionn policy.
  – To prevent unnecessary retry.
• So,
  – Modify RFC3484 to be shim-ready?
    • Preference for src addr selection or SRV RR like value?
    • Suggestion for Redundancy
    • TE capability.
  – Or do it in another place?