RFC 3484bis (Address Selection)
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Feedback on rfc3484-revise

• Specify replacement rather than deltas
• Avoid gratuitous changes to values in table
• Don’t use “mask” in IPv6, and prefix length issue can also occurs in source addr sel
• IPv4-translatable address handling obsoleted by SIIT update
• Need examples for new rules
• (Others covered in subsequent slides)
RFC1918 Address Scope (1/2)

• RFC 3484: site-local scope

• Problem:
  – $D = \{ \text{global IPv4, global IPv6} \}$
  – $S = \{ \text{RFC 1918 IPv4, 6to4} \}$
  – IPv6 dest preferred (Rule 2: matching scope)

• revise, rfc3484bis: global scope

• Allows configurability as a result, since goes down to at least rule 5 (matching label)
RFC1918 Address Scope (2/2)

• Apps that don’t work through NATs want 6to4
• Apps that work through NATs want IPv4
• This might argue for an API switch, like for public/temp addrs & home/care-of-addresses
• Without calling such an API, applications wanting the non-default behavior will have to walk the list and wait for one to fail and then try the other.
• If IPv4 connectivity fails because of a NAT, it’ll tend to fail right away, whereas 6to4 may be flaky
• Since it’s best to fail-fast, this argues for the default to be IPv4 (which as noted before requires global scope)
ULA Scope (sec. 10.6)

• Problems:
  – Low probability of symmetric reachability unless in same /48, or know better
  – RFC 3484 resulted in longest match sometimes preferring ULA dests, sometimes global dests

• Solution:
  – Prefer ULAs in same /48(s) over global dests
  – Prefer global dests over ULAs not in same /48

• ULAs still have global scope (as in RFC 3484)
Automatic rows

• MAY automatically add /48 rows based on own ULA and 6to4 addresses
• MUST NOT override a row for same prefix configured via other means (e.g. DHCPv6 or manual)
• SHOULD allow admin to disable automatic row additions
Concern with automatic rows

• “Making it be optional complicates configuration”

• Already have to deal with heterogenous hosts
  – (a) no RFC 3484,
  – (b) RFC 3484,
  – (c) RFC 3484bis

• “MUST NOT override” means config should be same for all RFC 3484bis hosts

• Claim this is no worse as a result
6to4 Addresses

• 6to4 addresses can be used for native connectivity within a site

• Problems:
  – Symmetric reachability more problematic than native IPv6 unless in same /48, or know better

• Allow automatic rows, as with ULAs (sec. 10.7)
  – Assumes native IPv6 connectivity within same /48
  – Everything outside is depreferred
Handling Brokenness

• Ray Hunter: “whatever you assume about RFC1918 addresses has a good chance of being incorrect unless you can truly detect/confirm presence of global IPv4 connectivity”

• IPv6 brokenness basically is same issue (with opposite address families)

• RFC 3484 showed how to configure policy to prefer IPv4 vs IPv6

• Rfc3484bis adds (sec 10.3.1):
  – MAY prefer IPv4 if no IPv6 Internet connectivity
Open Issue: Privacy default

• RFC 3484 says SHOULD prefer public (not temporary) addresses by default
  – Tim suggested reversing this
  – Privacy is a popular topic now
  – Windows has always done the reverse whenever temporary addresses are enabled
Anycast Addresses

• rfc3484-revise allowed anycast addresses as source addresses
• François-Xavier Le Bail raised issue of subnet-router anycast address being excepted
• rfc3484bis
  – removes RFC 3484 “MUST NOT” include anycast addresses as candidate source addresses
  – but does add any MUST about inclusion
    • up to implementation to include whatever it believe it has a way to make work