

Destination/Source Routing

draft-ietf-rtgwg-dst-src-routing-revive-02
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IETF 121 · Dublin, IE · rtgwg · 2024-11-05

Changelog

... is empty

Shu Yang agreed to act as editor

History

- draft just had 10th birthday 🎉
- originally homenet related
- but keeps popping up in random places

refresher/summary (1)

- start at most specific destination prefix match
- look for best source prefix match w/ that dst
 - match found? \Rightarrow stop
 - no source prefix match?
 \Rightarrow repeat with next less specific destination

refresher/summary (2)

- IPv6 only
- 'classic' dst-only route
≡ dst-src route with src prefix ::/0

refresher/summary (3)

- intended for single consistent routing domain
 - ⇒ destination before source
 - ⇒ opposite of typical policy routing
 - (this is not intended to represent zones/VRFs!)
- can (should) be implemented without loop
(use artificial/dummy routes if needed)

Protocol cross-refs

- specified for BABEL in RFC9079 (Aug' 2021)
 - originally referenced this doc, dropped to publish
- OSPFv3 & IS-IS drafts expired
 - may revive (*after this*) depending on interest
- doc'ing common bits is main goal of this draft

Implementations (forwarding)

Linux:

```
commit 4e96c2b4180aff4f080b77314712073c6ca430e7
Author: YOSHIFUJI Hideaki <yoshfujii@linux-ipv6.org>
Date:   Wed Aug 23 17:23:39 2006 -0700
```

[IPV6] KCONFIG: Add subtrees support.

Implementations (forwarding)

FITI implementation

- Control Plane:
Updated OSPFv3 protocol
- Forwarding Plane:
Hardware TCAM-based,
implemented on Barefoot Tofino

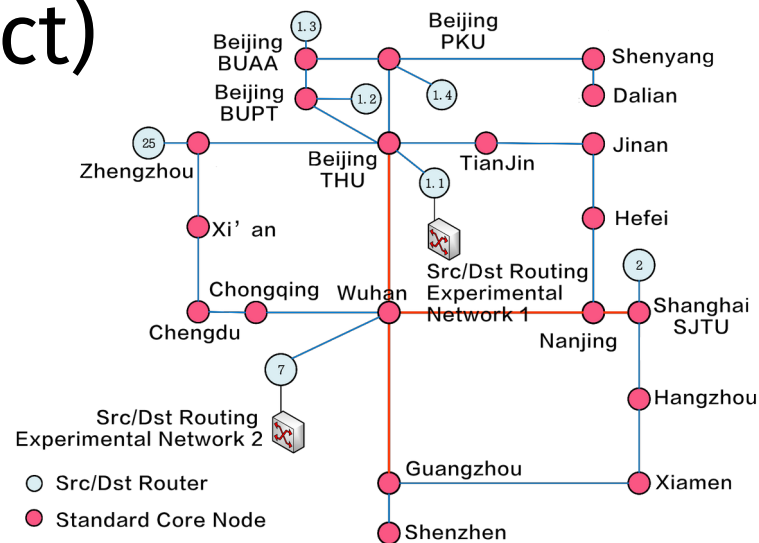


Implementations (control plane)

- BIRD (static, BABEL)
- FRRouting (static)
- babeld

Deployment (1)

- *Future Internet Infrastructure* (CN research network project)
- 7 dst-src routers deployed & tested; doing load balancing, access control, multi-homing and FRR



Deployment (2)

- any OpenWRT router/CPE
 - includes a whole bunch of OEMs shipping OpenWRT derivatives
 - kernel/forwarding on by default, control plane support (=included packages) varies

Source address sel. interactions (1)

- RFC6724 rule 5.5 keeps coming up

Rule 5.5: Prefer addresses in a prefix advertised by the next-hop.
If SA or SA's prefix is assigned by the selected next-hop that will be used to send to D and SB or SB's prefix is assigned by a different next-hop, then prefer SA. [...]

Source address sel. interactions (2)

- selected source address is persistent, happens at connection establishment
- routing choice may or may not be sticky
 - even if it is sticky, routing info can change
 - if done *extra* poorly, chosen source address might flip which gateway is selected from equal options (e.g. part of LB hash) ⇒ self-break
 - have not actually seen this, thankfully (hosts don't ECMP on default routers)

Source address sel. interactions (3)

- a dst/src routing table on the end host actually makes this work correctly
 - when processing RA/PIO, install additional default routes with source prefix = PIO range
- not described in draft...
 - ...yet (should it?)

Questions?