RBS (Recursive BitString Structure)
for Multicast Source Routing over IPv6

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Overview

Native IPv6 solution for P2MP (multicast) services

Stateless = source-routed, extending SRv6 architecture (terminology/functionality)

Target "solution" WG: PIM – responsible for P2MP (agreement with SPRING)

But needs new HBH EH (P2MP equivalent for SRH) → 6man

Proposed RBS header vs. SRH / RFC8754 (unicast)

Draft does not currently cover all aspects

SRH: Extension header carries segment-path. But compression work: 8 years later (now)

RBS: Extension header carries segment-tree. Very well (?!) compressed

Segment-by-Segment forwarding by IPv6-Dest: Same

Segment-by-Segment "extraction" of next-segment: "logically" Same

    BUT: in RBS, each segment may replicate: e.g.: extract N > 1 next-hop segments

Egress (optional) TLV: Should be shared with SRH (TBD)

How it works (high level)

Compressed Tree "Address" at A

Describes whole tree!!
Rtr A examines its adjacency bits
Sees two bits are set. Creates two packet copies
For each, packet copy needs to adjust address

Needed Compressed Tree "Address" at B
Needed Compressed Tree "Address" at C
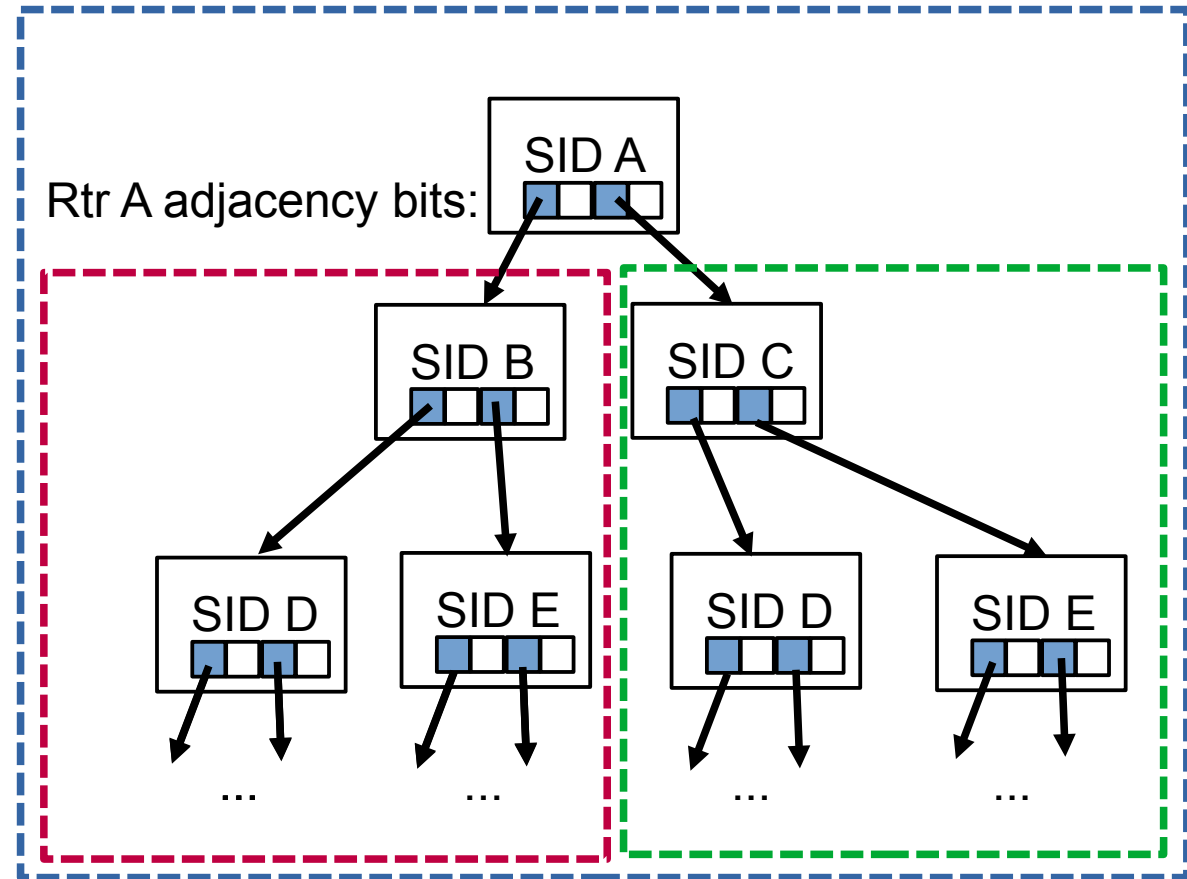
Per-hop "rewrite" operation options:

A) rewrite compressed tree to only sub-tree
   Unclear if shortening EH is allowed
B) Adjust "Segment Offset" equivalent
C) adjust "Segment Offset / Length"
   More compact compression than B)

Next steps / IETF process

Assuming there is SRv6 community that wants this (and vote to adopt)

How to adopt the work between "use-case WGs" (SPRING/PIM) and 6MAN

What to do so this will be easier / faster / Better 2nd time around than with SRH ?

Would we need an additional "arch" document in PIM ?

Similar to RFC 8986/SRv6 ?

Assume the EH spec would go to 6MAN

Can we bake extensibility / modification by "use-case" WG
  better/easier into EH specification than with RFC8754 ?

E.g.: Have multiple multicast-tree address compression option ?

E.g.: Define permissible per-segment modifications
  (shorten, rewrite one/two fields , rewrite more ?)

The End

Please come to PIM-WG, Thursday 14:30 – 16:30 Park Suite 3

If you are interested in this