IGP Flexible Algorithm

draft-ietf-lsr-flex-algo

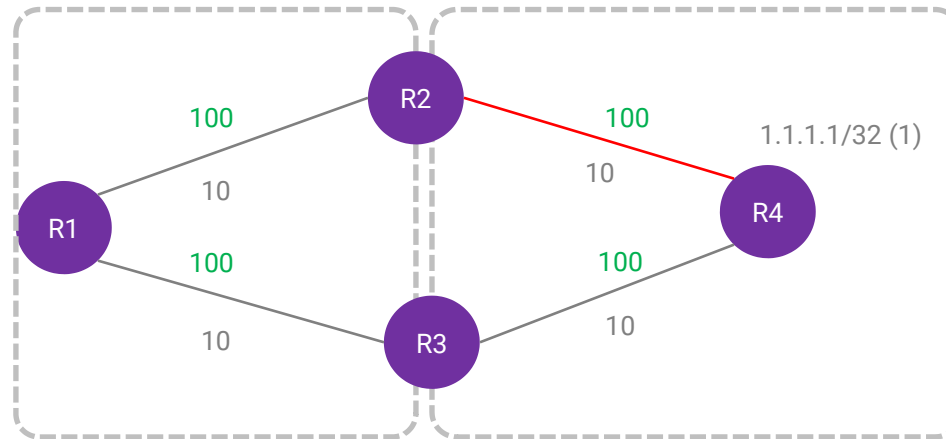P. Psenak, C. Filsfils, K. Talaulikar (Cisco)

S. Hegde (Juniper)
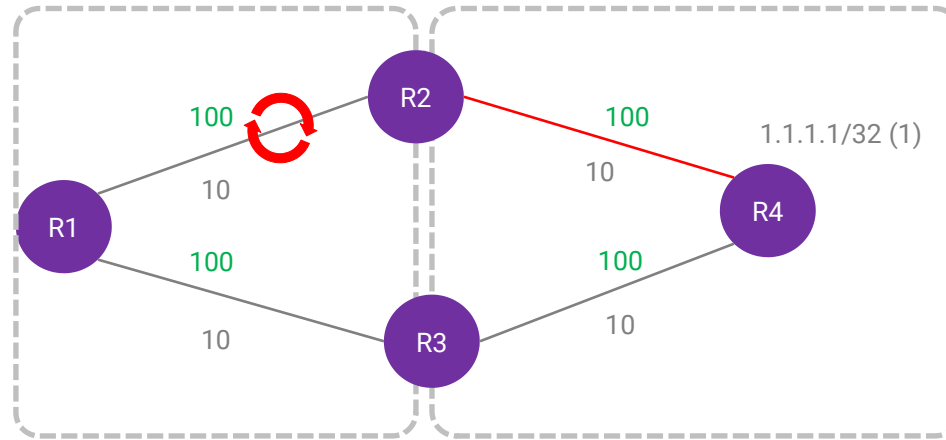
A. Gulko (Thomson Reuters)

ASLA SABM X-bit

- [draft-ietf-isis-te-app](#) ([draft-ietf-ospf-te-link-attr-reuse](#)) define:
  - Application Specific Link Attribute (ASLA)
  - Standard Application Bit Mask (SABM)
- SABM Bit-3 - Flexible Algorithm (X-bit)
- X-bit was removed from from the above drafts
- X-bit was added to [draft-ietf-lsr-flex-algo](#)
  - Removed the dependency of ASLA drafts on Flex-Algo draft
  - No funcional change

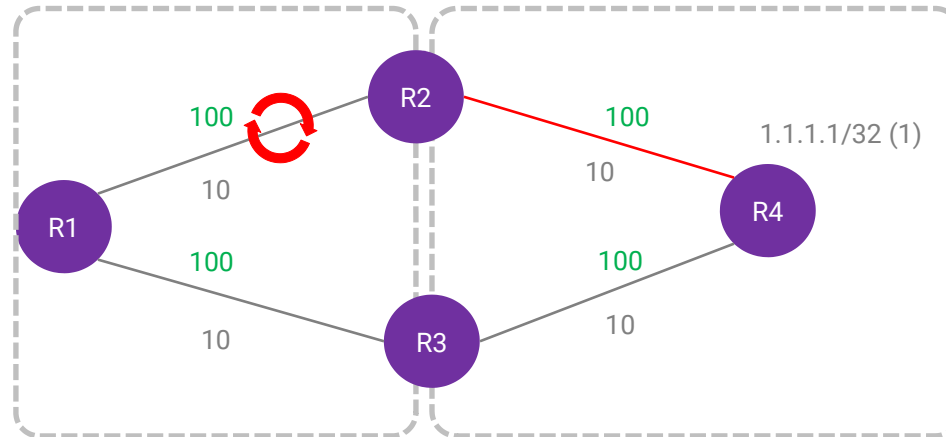# Flex-Algo Inter-area, Inter-domain

- Link R2-R4 marked with affinity RED
- FAD(128) – exclude affinity RED

Flex-Algo Inter-area, Inter-domain

- Flex-Algo Prefix Metric (FAPM) not part of FAD(128)
- Both R2 and R3 advertise 1.1.1.1/32 to left area/domain with Algo-0 metric 11
- R1 sees two path to reach 1.1.1.1/32 in Algo 128
  - Via R2 – metric 111
  - Via R3 – metric 111

Flex-Algo Inter-area, Inter-domain

- FAPM part of FAD(128)
- R2 advertise 1.1.1.1/32 to left area/domain with algo 0 metric 11
- R3 advertise 1.1.1.1/32 to left area/domain with algo 0 metric 11 and FAPM(128) 101
- R1 sees two path to reach 1.1.1.1/32 in Algo 128
  - Via R2 – metric 111
  - ~~Via R3 – metric 201~~

Flex-Algo Inter-area, Inter-domain

- Solution with FAPM
  - If FAPM is part of the FAD
    - FAPM MUST be set set by ABR/ASBR
    - FAPM MUST be used during calculation for inter-area or external prefixes
    - If FAPM is not advertised for inter-area or external prefix, the prefix MUST be considered unreachable
    - FAPM MUST NOT be advertised with ISIS L1 or L2 intra-area, OSPFv2 intra-area or OSPFv3 intra area routes. If present, it MUST be ignored.

Flex-Algo Inter-area, Inter-domain

- Without FAPM

  – NOT RECOMMENDED to use the Flex- Algorithm for inter-area or inter-domain prefix reachability

  – without the explicit FAPM advertisement it is not possible to conclude whether the ABR or ASBR has reachability to the inter-area or inter-domain prefix for a given Flex-Algorithm in a next area or domain

  – Sending the Flex-Algorithm traffic for such prefix towards the ABR or ASBR may result in traffic looping or black-holing

Next Steps

- Multiple implementations available
- Continue to evolve the document
- Questions/Comments?

Thank you!