Topology ID In Ipv6 EH

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Background

- Currently MT/Flex-Algos are mainly identified using different IP addresses in data packet

  - There is no generic approach for different MT/Flex-Algos using shared IP addresses

- The application of network slicing increases the number of MT/Flex-Algo in the network, the deployment complexity would also increase due to the management and configuration of per MT/Flex-Algo IP addresses

- An interface may belong to multiple MT/flexalgo, this problem cannot be solved by associating separate interfaces with different MT/Flexalgos

- Goals:

  This document introduces a generic approach to allow different MT/Flex-Algos to share IP addresses

  - A new Hop-by-Hop option of IPv6 extension header is defined to carry the topology identifier, which is used to identify the forwarding table instance created for MT or Flex-Algo
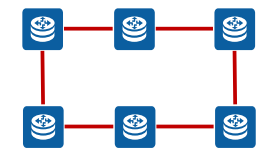
Topology Identifier in IPv6 Extension Header

A0:1/64   A0:2/64   A0:3/64   A0:4/64

A0:5/64   A0:6/64   A0:7/64   A0:8/64
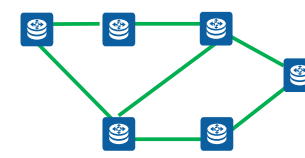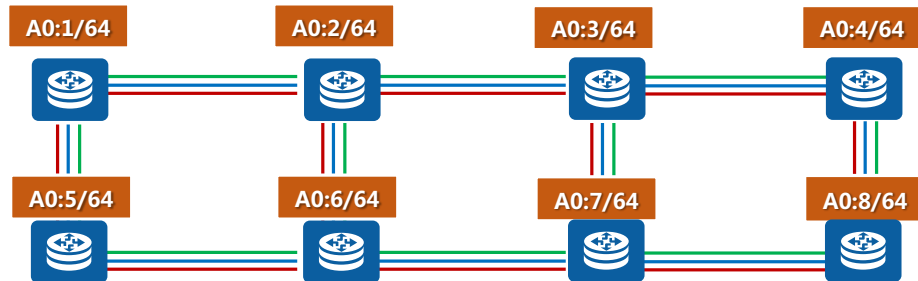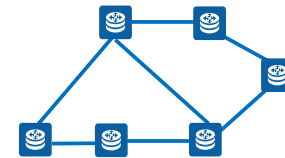
Flexalgo 128   Flexalgo 129   Flexalgo 130

An example:

- Links with different colors belong to different Flex-Algos.
  - Flex-Algo 128, Flex-Algo 129 and Flex-Algo 130
- All Flex-Algos share the same node IP address
- For each Flex-Algo, each node calculates an SPF tree
  independently and generates an independent RIB/FIB.

Fib1	Fib2	Fib3
A0:1/64 GE3/0/1	A0:1/64 GE3/1/1	A0:1/64 GE3/2/1
A0:2/64 GE3/0/2	A0:2/64 GE3/1/2	A0:2/64 GE3/2/2
A0:3/64 GE3/0/3	A0:3/64 GE3/1/3	A0:3/64 GE3/2/3
A0:4/64 GE3/0/4	A0:4/64 GE3/1/4	A0:4/64 GE3/2/4

Flexalgo 128   Flexalgo 129   Flexalgo 130

Topology Identifier in IPv6 Extension Header
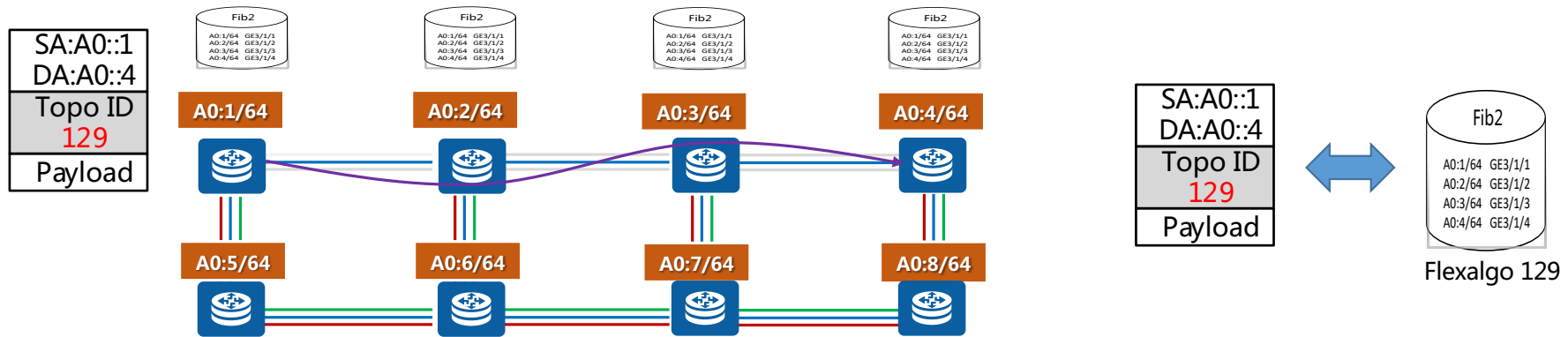
- Topo ID associated with Flex-Algo is encapsulated on the head node.
- The middle node makes the forwarding table selection based on the topology ID. Then forwards packets according to the corresponding forwarding table.

Next Steps

- Collect comments and feedbacks

- Revise the draft accordingly

Thank You