EANTC BIER Report

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What did we test

- Unicast VPN with Segment Routing SR-ISIS
- BIER underlay with ISIS extensions
- NG-MVPN using “some procedures of” RFC9573 MVPN/EVPN with P2MP tunnel aggregation via DCB labels

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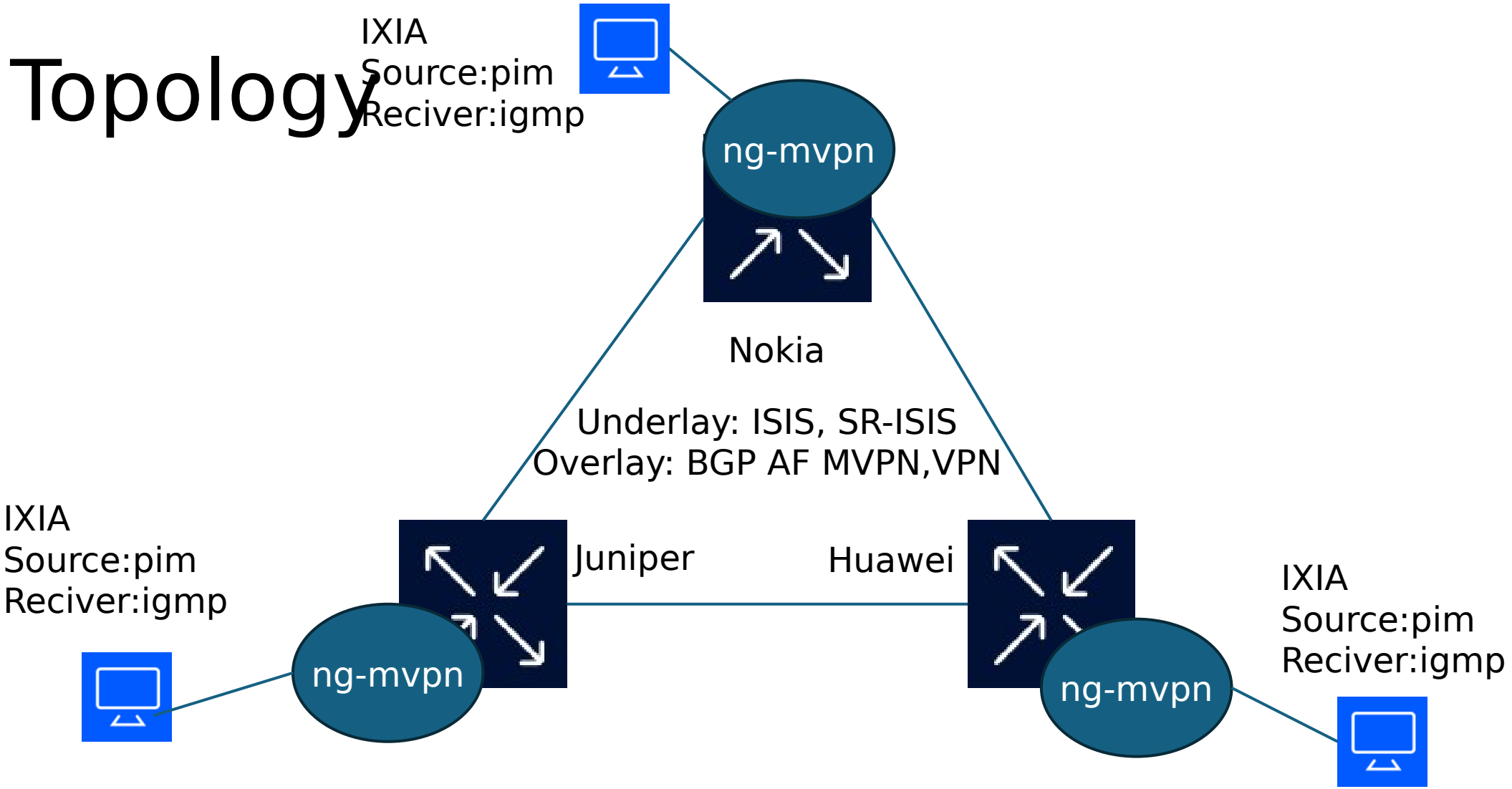
Topology



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Configuration

- Nokia uses RFC8556 procedures MVPN with BIER
  - But can assign a DCB label statically as per RFC9573, if DCB is configured statically then the arriving VC label in the PTA of MVPN routes must match the DCB label
  - The above means Nokia is still in upstream-assigned label mode
- Juniper supports RFC9573 MVPN/EVPN with P2MP tunnel aggregation via DCB labels
  - DCB labels are downstream-assigned labels

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Test results

- Underlay and Overlay was established between all vendors
  - Overlay NG-MVPN between Nokia Juniper with static DCB configuration on Nokia was established successfully
  - Overlay NG-MVPN between Nokia and Huawei was established
- IXIA was used as host and source attached to the PEs with IGMP and PIM accordingly used for (S,G) Joins/Prunes
  - IXIA host injected (S,G)s to the PEs via IGMP and after Source routes were resolved via unicast, all vendors advertised the corresponding NG-MVPN routes to build RX/TX PMSIs for advertised (S,G)s

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Test Results (Cont)

- A Traffic Stream was sent from all IXIA Sources to all Hosts
- Traffic was successfully received on hosts between Nokia and Huawei
- Traffic was discarded between Nokia and Juniper and Huawei and Juniper.
  - Next slide for why the traffic was discarded

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Observed Interop issues

- Both Nokia and Huawei program the BIER header “next protocol header identifier” as MPLS Packet with upstream assigned label (value 2)
- While Juniper fully supporting RFC9573 program the BIER header “next protocol header identifier” as MPLS Packet with downstream assigned label (value 1)
  - Nokia DCB is configured statically on the router, but Nokia still uses RFC8556 procedures as upstream assigned label.
- **<u>Overall, the interop was successful with minor and fully understood resolvable issues for next EANTC</u>**

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Discussion

- RFC 8296 section 4 BIER header “next protocol header identifier” has 2 separate protocol for MPLS
  - Packet with downstream assigned label
  - Packet with upstream assigned label
  - Are these 2 protocols necessary or can they be combined?
- As seen from interop testing RFC9573 can be implemented with static DCB and procedures in RFC8556 with upstream assigned label
  - This can create interop confusion implementing RFC9573

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THANK YOU

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