SRv6
# On-Path Delay Measurement with Anomaly Detection
OPSAWG WG

IETF 116
March 25-26th, 2023
Hackathon

Hackathon - Plan

- Establish multivendor SRv6 network topology with network telemetry data collection and data processing pipeline.

- Validate and visualize two IPFIX implementations of [draft-ietf-opsawg-ipfix-srv6-srh](#) and [draft-ietf-opsawg-ipfix-on-path-telemetry](#) in [FD.io](#) VPP and on Huawei VRP.

- Extend Network Anomaly Detection to recognize on-path delay increase and include delay in Max Concern Score calculation.
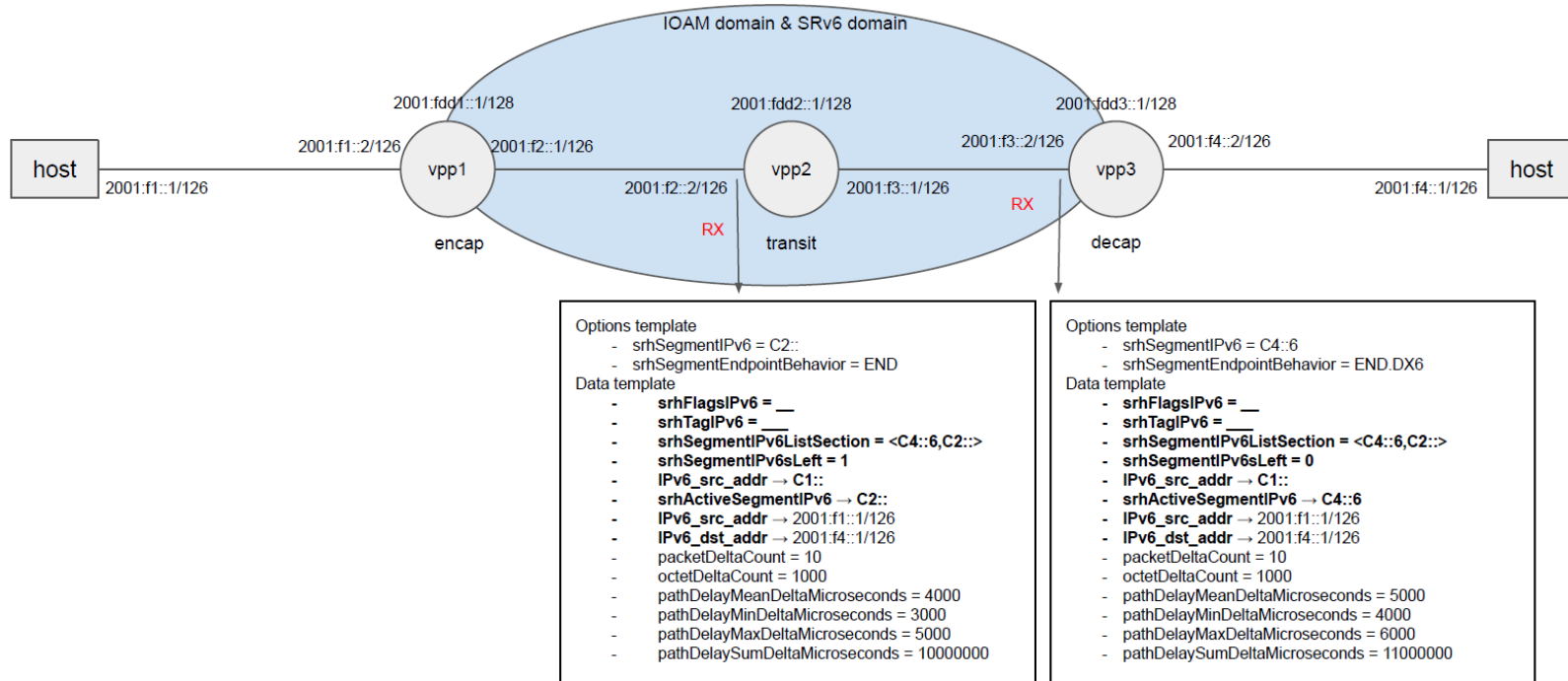
Hackathon – Network (1/2)
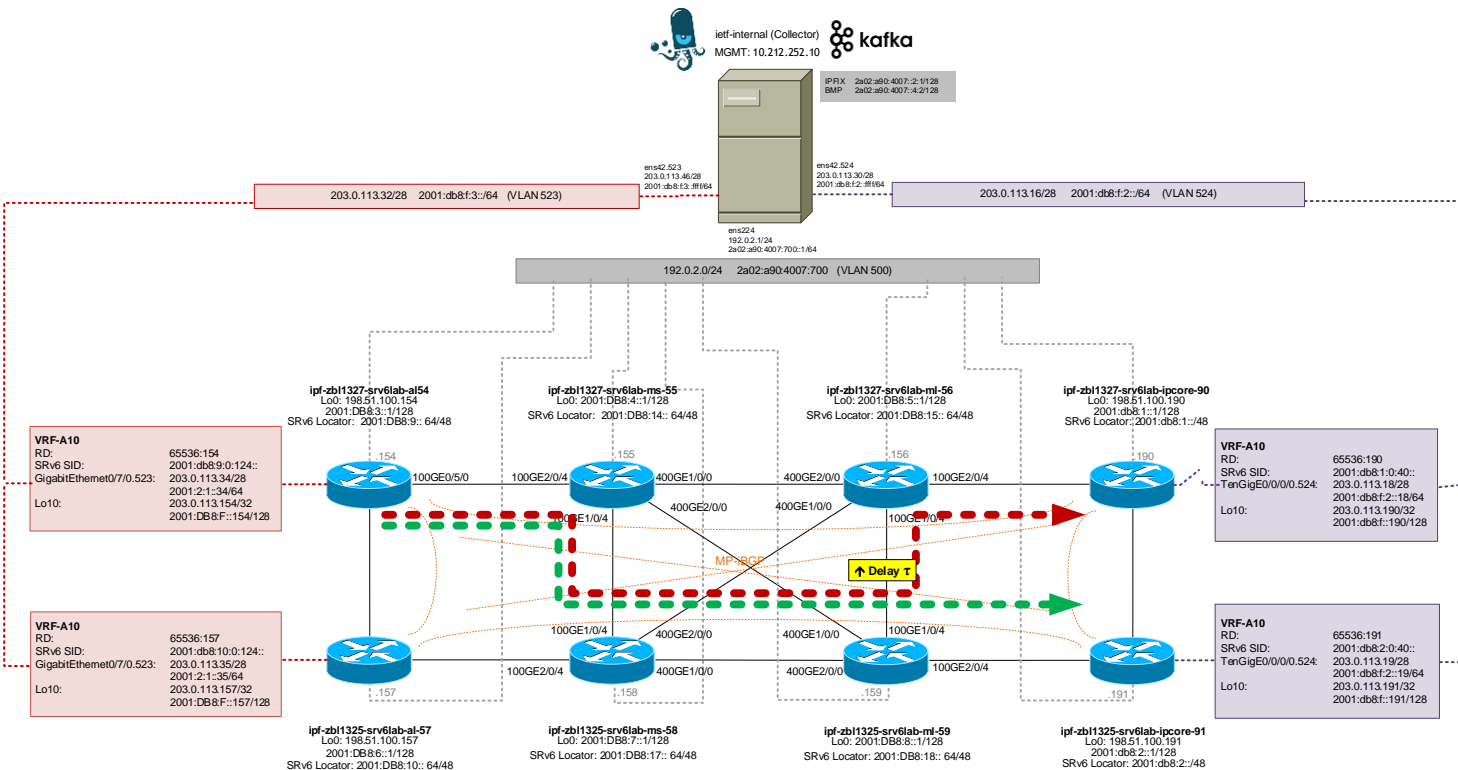
SRv6 network topology with two vendors and IPFIX data processing pipeline.

Huawei with four P and two PE nodes exposing SRH provider data-plane draft-ietf-opsawg-ipfix-srv6-srh and on-path delay as described in draft-ietf-opsawg-ipfix-on-path-telemetry.

Cisco with two PE nodes exposing customer data-plane.

Hackathon – Network (2/2)

- FD.io VPP Open Source Code published: https://github.com/network-analytics/vpp-srh-onpath-telemetry

Visualization

(1) Shows **SRv6 SID list change** of the traffic engineered paths.

(2) Shows **on which node how much on-path delay** was being measured.

(3) Shows the **BGP update/withdrawals** from the **topology change**.

(4) Shows that **Network Anomaly Detection detects the topology and delay change** and the Max Concern Score calculation**.**

Conclusion

Achievements

- Running SRv6 multivendor network topology with traffic engineering and uSID compression.

- Validating two interoperable implementations of draft-ietf-opsawg-ipfix-on-path-telemetry

- Calculate PathDelayMeanDeltaMicroseconds by dividing PathDelaySumDeltaMicroseconds by packetDeltaCount in pmacct data collection

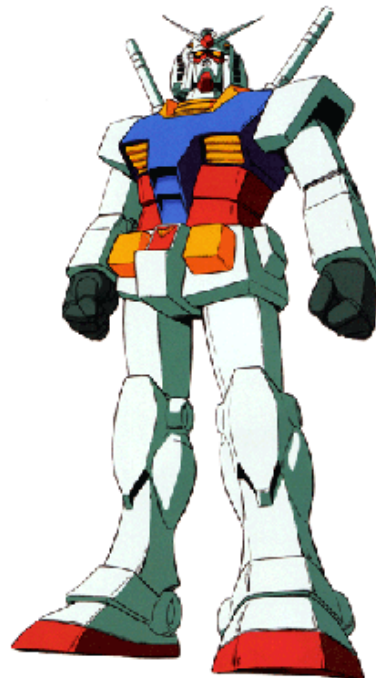- Network Anomaly Detection recognized BGP topology and on-path delay change

What we learned (again)

- Good
  - Preparation and good team setup is gold.
  - Yuta Fukagawa and Takeru Hayasaka joining our table and implementing draft-ietf-opsawg-ipfix-srv6-srh in XDP (eXpress Data Path).
  - As always… the beers were most welcome!

- Bad
  - -

Thanks to…

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- Marco Tollini - Swisscom
- Thomas Graf - Swisscom

….and Huawei, INSA Lyon and Pmacct for the network environment, software and test cases.