IETF Hackathon - Traffic Steering using BGP FlowSpec with SR Policy

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I E T F

Hackathon Plan

Background: Comprehensive management of an SRv6 network from a controller.

- **Our I-D, SRv6 SFC Architecture with SR-aware Functions: https://datatracker.ietf.org/doc/draft-watal-spring-srv6-sfc-sr-aware-functions/**

Objective:

- **Manage SR policies, including the SFC chain.**
- **Enable SR policy selection on a per-flow basis.**

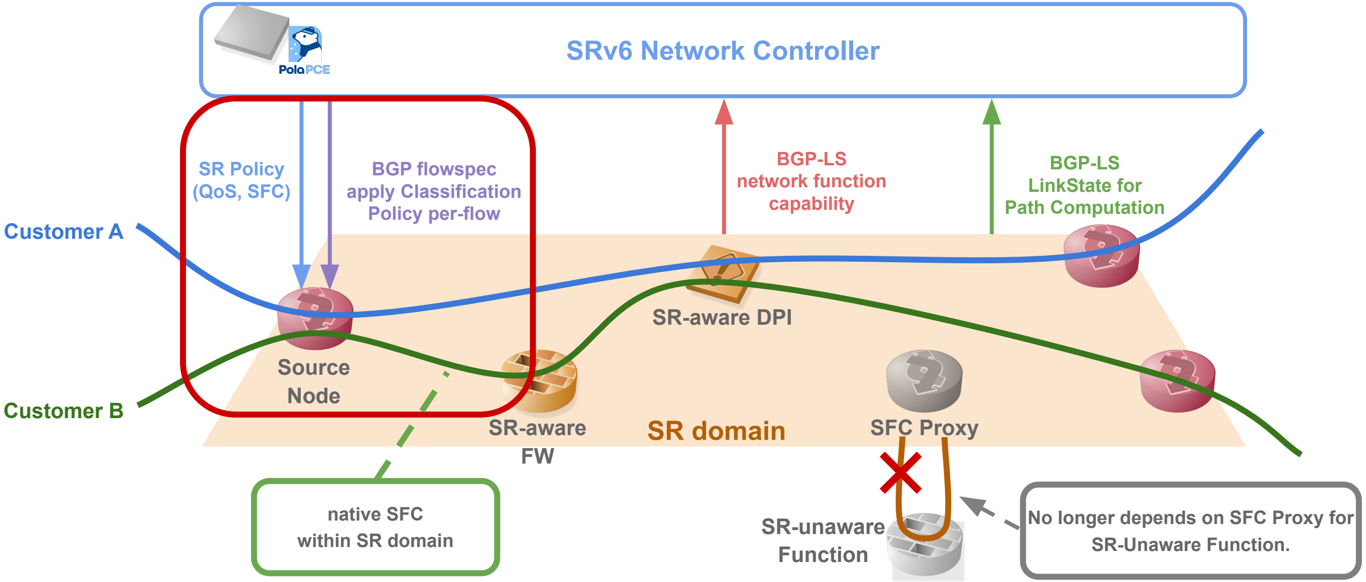
Hackathon Goals:

- **Implement BGP-LS extensions in GoBGP.**
  - **Develop GoBGP daemon and API.**
  - **Create a Wireshark dissector and verify a packet.**
- **Implement PCEP in FITELnet vFX and Pola PCE.**

SRv6 SFC Architecture

The concept that controller manages the entire SRv6 SFC network.

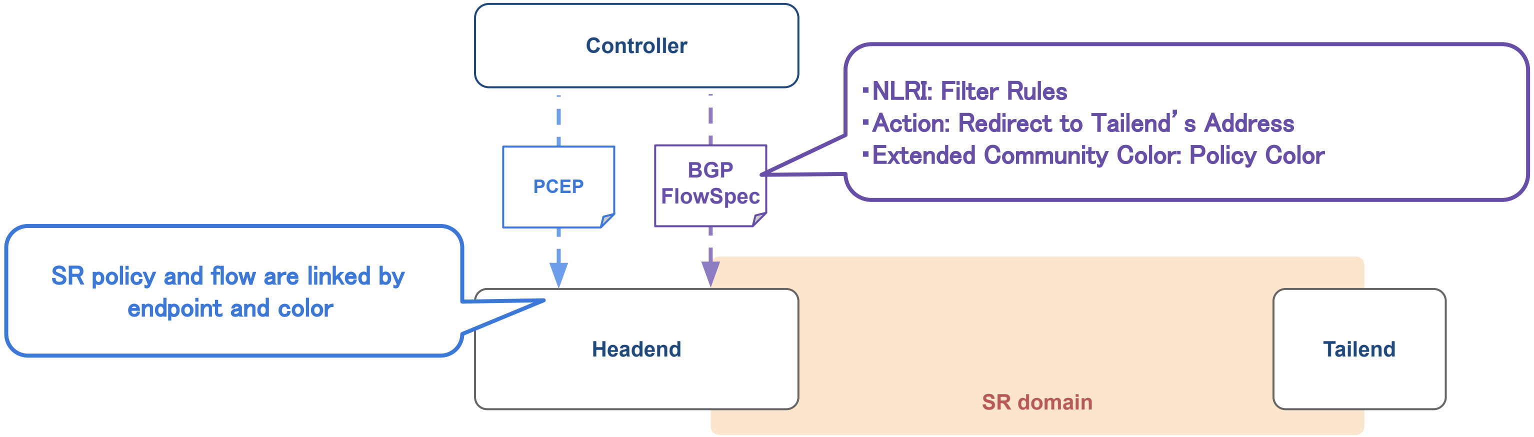
The controller collects information about Service Segments and apply SR Policy based on the information about available Network Functions.



BGP FlowSpec with SR Policy

BGP FlowSpec links a flow to an SR Policy using NLRI (target flow), Endpoint, and color.

I-D: https://datatracker.ietf.org/doc/draft-ietf-idr-ts-flowspec-srv6-policy/05/

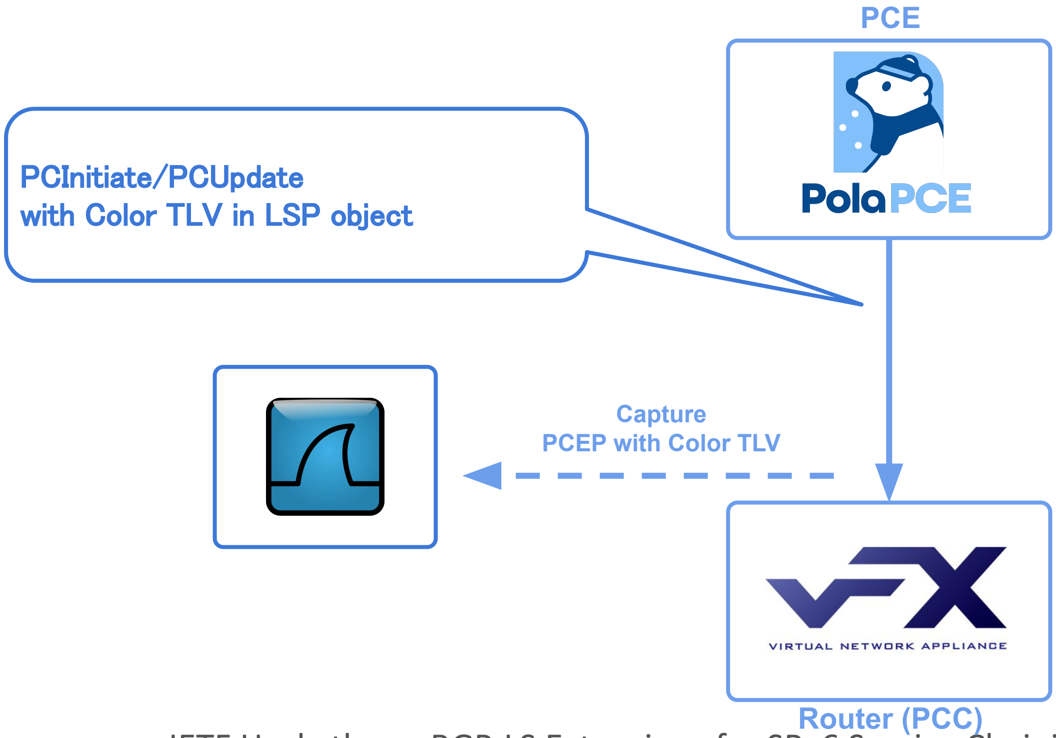


Implementations (1/3)

- **GoBGP** (https://github.com/osrg/gobgp)
    - OSS BGP daemon written in Go
    - Add implementations for two functionality: BGP daemon and as a go library
- **FITELnet vFX** (https://www.furukawa.co.jp/fitelnet/product/vfx/)
    - Software router by Furukawa Electric
    - Add PCEP daemon and SRv6 extensions
- **Pola PCE** (https://nttcom.github.io/pola/)
    - OSS Path Computation Element written by NTT Com
    - Add PCEP color TLV (draft-ietf-pce-pcep-color)
- **Wireshark** (https://www.wireshark.org/)
    - OSS network protocol analyzer
    - Add dissector for PCEP color TLV (draft-ietf-pce-pcep-color)

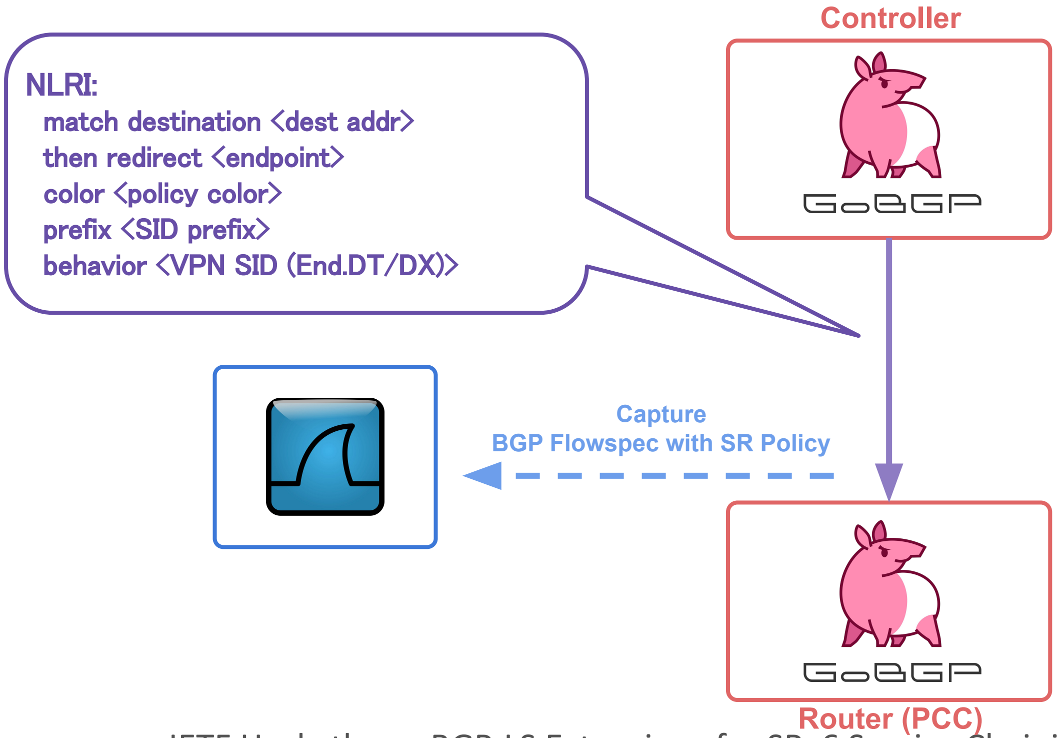
Implementations (2/3)

Send SR Policy with color from Pola PCE to vFX (PCC).



Implementations (2/3)

Send BGP FlowSpec from controller to router with daemon mode GoBGP.



What got done

- GoBGP
  - COMPLETED: Function to inject Flowspec routes into the GoBGP daemon
  - COMPLETED: Generator to output user-defined Flowspec packets
- FITELnet vFX
  - COMPLETED: Add PCEP daemon.
  - COMPLETED: SRv6 extensions and communicate to stateful PCE
- Pola PCE
  - COMPLETED: Add Color TLV (draft-ietf-pce-pcep-color)
- Wireshark
  - COMPLETED: Add dissector for Color Capability Flag

Our Code

- **GoBGP**: https://github.com/y-kzm/gobgp/tree/draft-ietf-idr-ts-flowspec-srv6-policy-05-yykzm
- **Pola PCE**: https://github.com/nttcom/pola/tree/feature/draft-ietf-pce-pcep-color-06
- **Wireshark Dissector:** https://gitlab.com/takuan517/wireshark/-/tree/feature/draft-ietf-pce-pcep-color-06-flag

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