



# Feedback Optimization Framework for BGP FlowSpec

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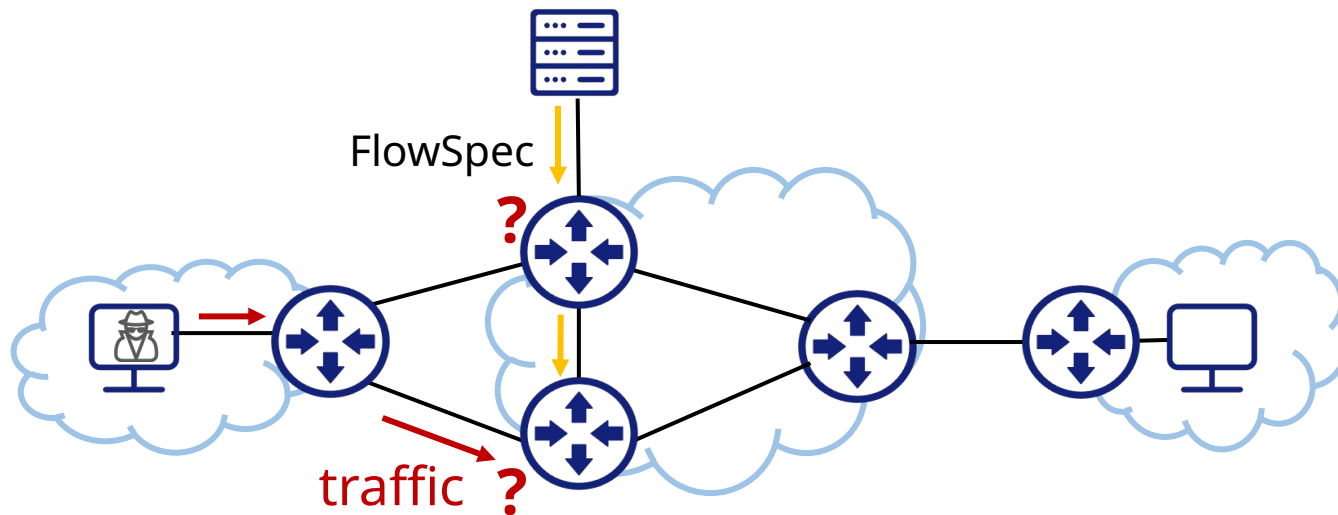
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# Problem Statement

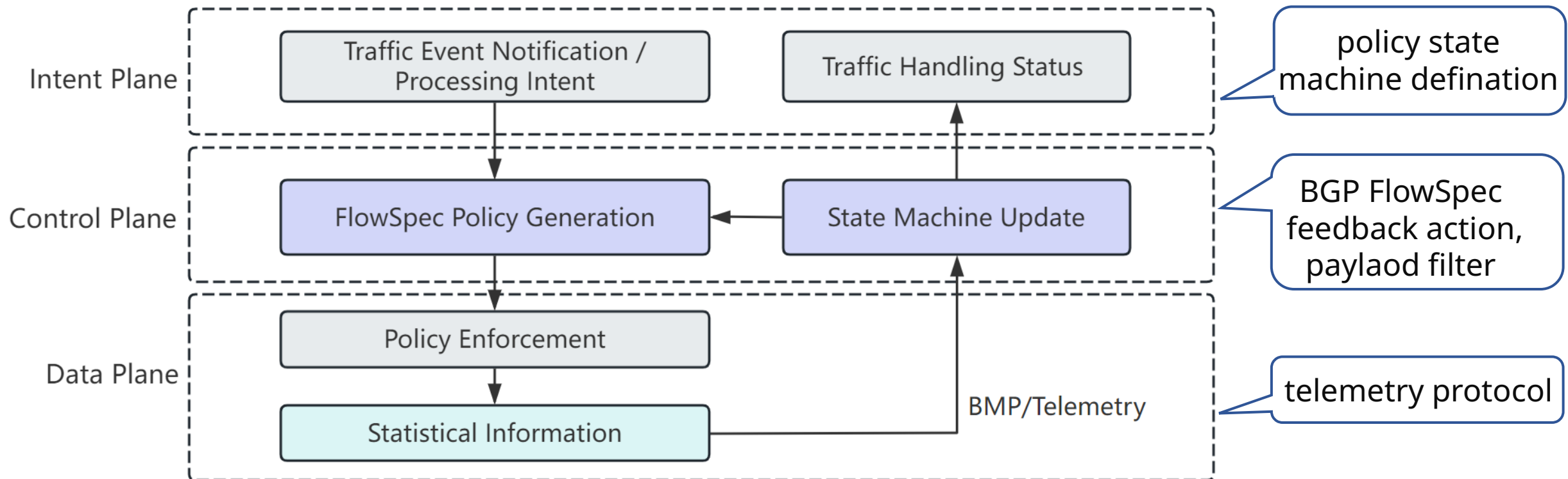
- BGP FlowSpec provides **one-way control**, where successful rule propagation does not imply effective enforcement
- FlowSpec rules may become ineffective due to policy conflicts, installation failures, or lack of traffic matching, and may persist without timely resolution
- Especially in the data plane, enforcement results are not visible



Operators need execution feedback to understand real enforcement behavior and continuously optimize traffic handling strategies.

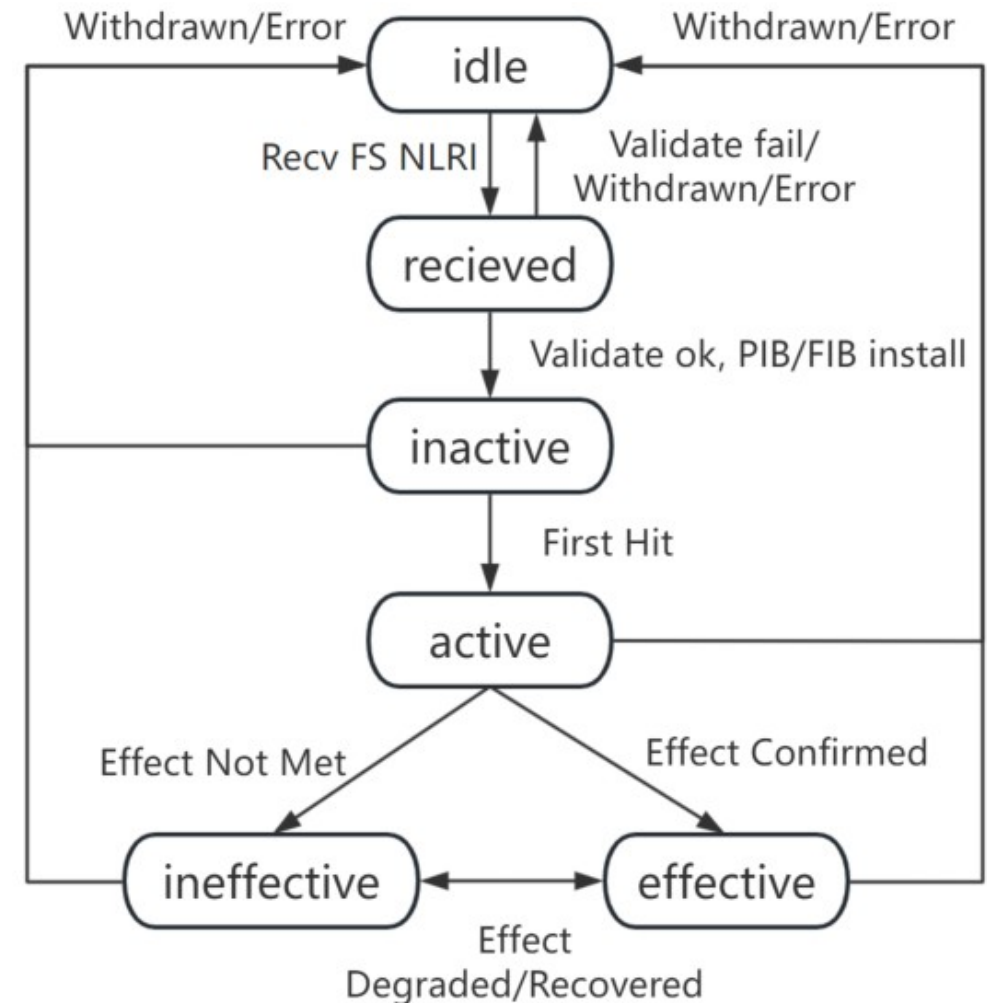
# Feedback Optimization Framework for FlowSpec

- FlowSpec routes carry a feedback identifier; upon reception, confirm status and update state-machine; configure the telemetry protocol
- Routers use telemetry protocol to report rule installation status; periodically send hit statistics collected from the data plane



# FlowSpec Policy State Machine

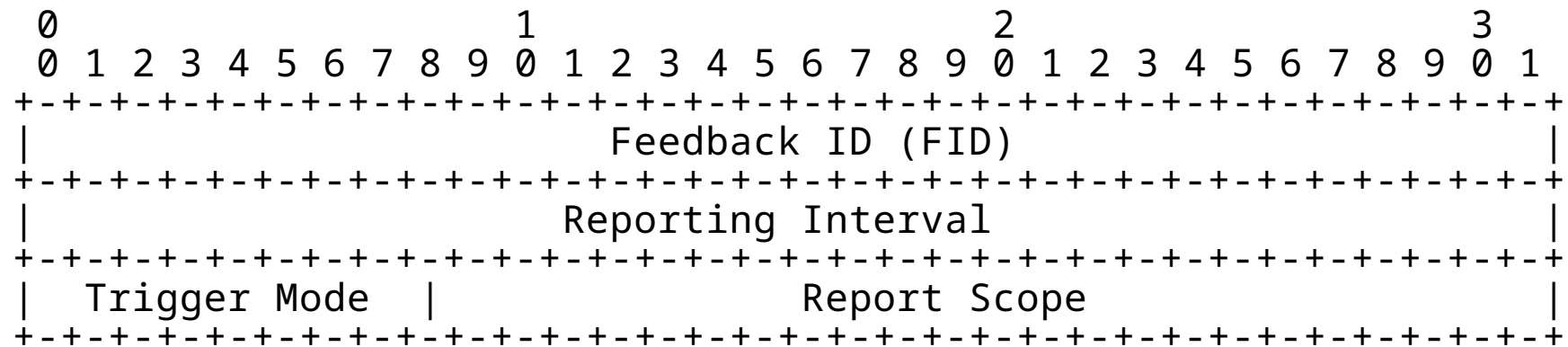
- idle : Rule object does not exist
- received : FlowSpec NLRI received via BGP (visible in RIB)
- inactive : Rule validated and installed as a policy entry (PIB / FIB entry exists )
- active : Rule is on forwarding path and traffic matched
- effective : Observed effect meets expected thresholds
- ineffective : Execution does not meet expected objectives



# FlowSpec Extension of Feedback Action

- Feedback action is encoded in the **community container**

- Encoding



**Feedback ID (32 bit):** Unique identifier generated by the controller to correlate FlowSpec feedback across rules and devices.

**Reporting Interval (32 bit):** Periodic feedback reporting interval in seconds; 0 means disables periodic reporting.

**Trigger Mode (8 bit):** Specifying the feedback trigger mode, 00=periodic enabled, 01=event-only, 10/11 = Reserved

**Report Scope (8 bits):** field defining the reporting scope, 00=Global, 01=Inter-AS, 10=Intra-AS, 11=Reserved

# Next Steps

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- Gather community feedback to optimize the framework
- Looking for collaborators and suitable deployment scenarios
- Propose telemetry extension protocol
  
- Our Proposals
  - feedback action : [draft-cui-idr-flowspec-feedback-binding](#)
  - payload filter : [draft-cui-idr-content-filter-flowspec](#)

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