



# Measurement Collection through Custom Packet Processing in P4

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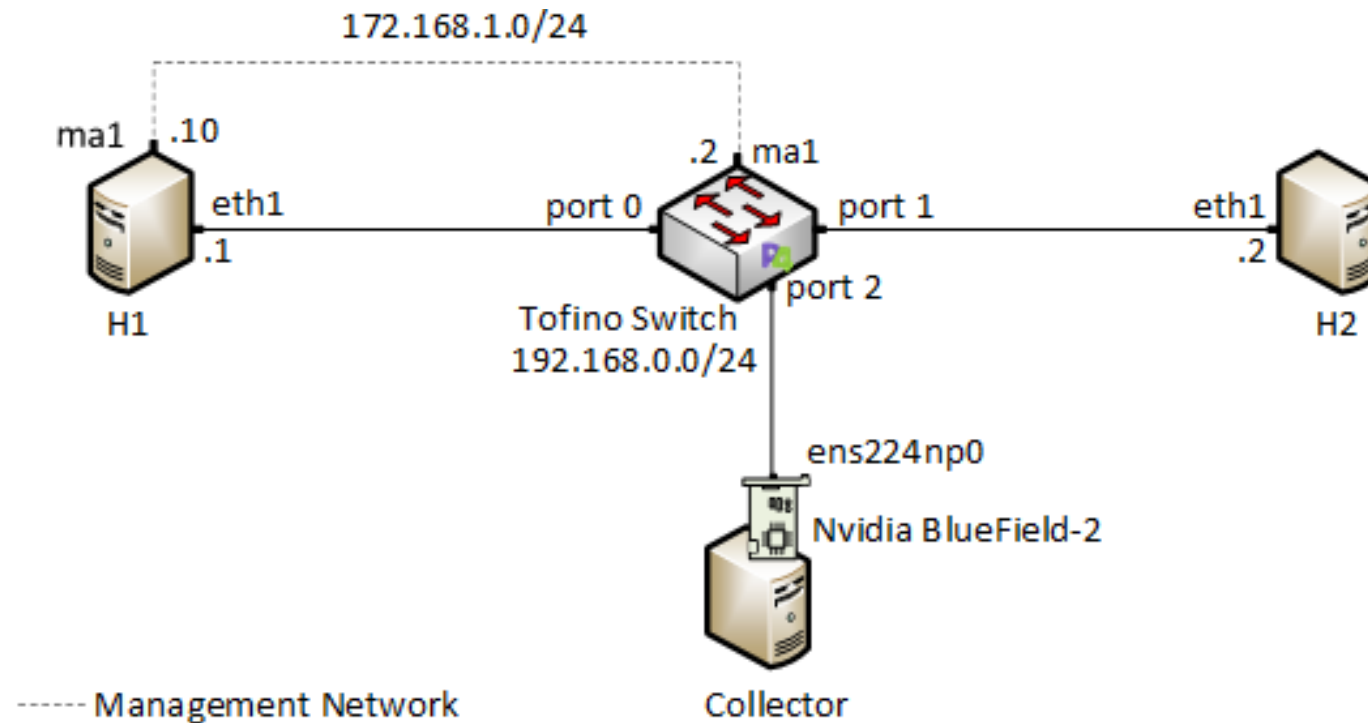
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# Agenda

- Experimental Topology
- System Design
- Data Plane
- Control Plane
- Data Collection and Visualization
- Conclusion

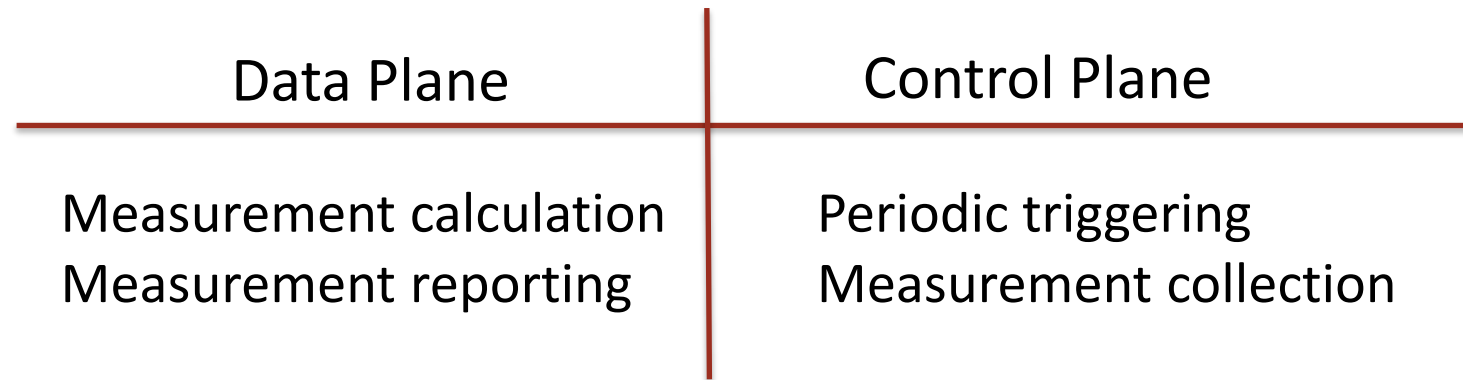
# Experimental Topology

- The topology consists of three servers connected by a P4 programmable switch
- Two servers are used to exchange data, and one server operates as the collector

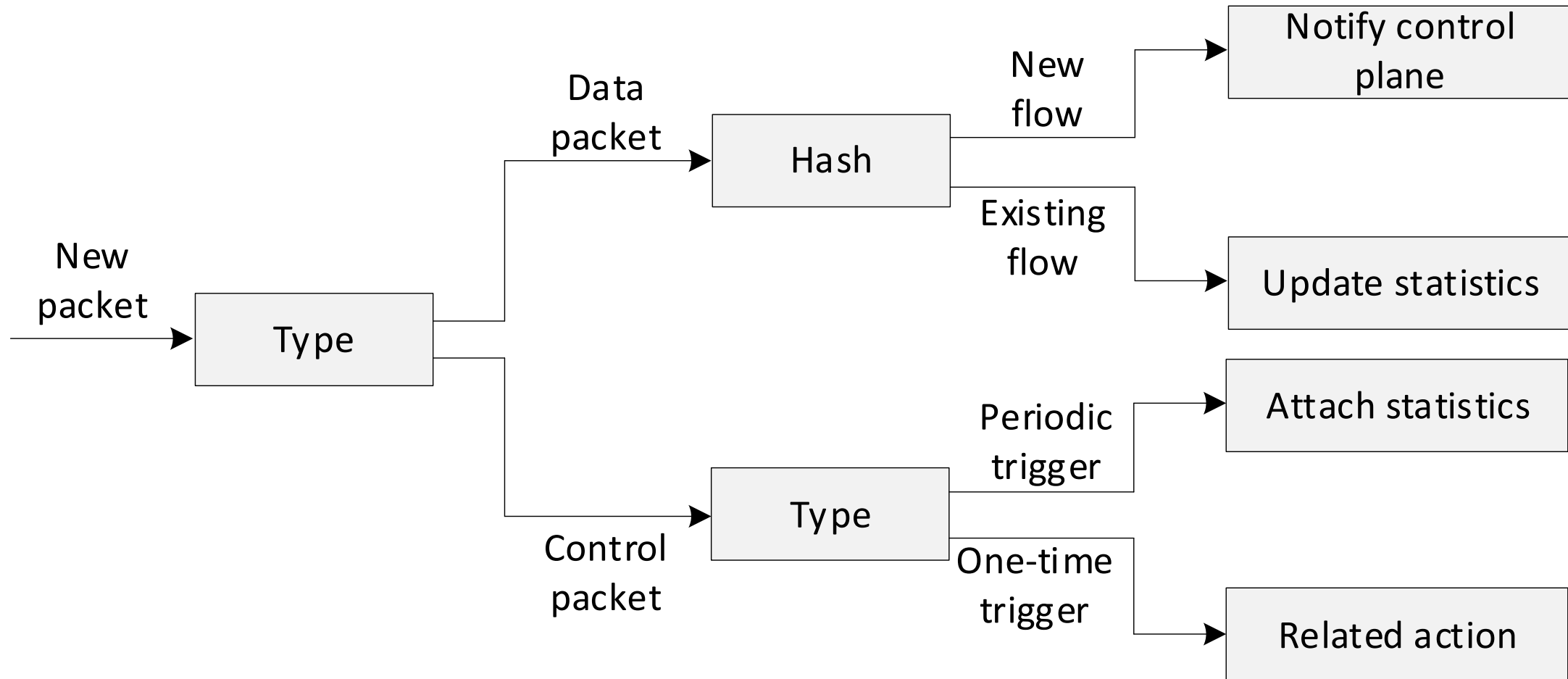


# System Design

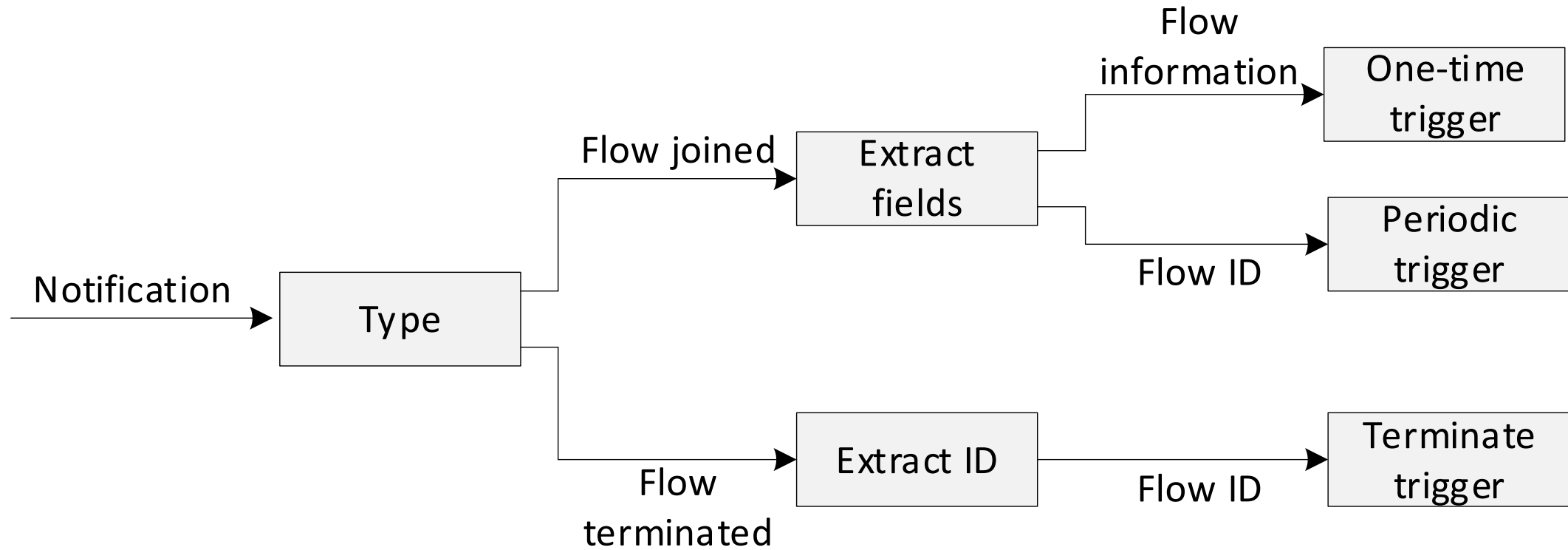
- The data plane is responsible for calculating per-flow the statistics
- The control plane periodically triggers the data plane to report the measurements
- The data plane utilizes a custom header to append the calculated statistics
- The control plane processes and stores the reports received from the data plane of the switch



# Data Plane

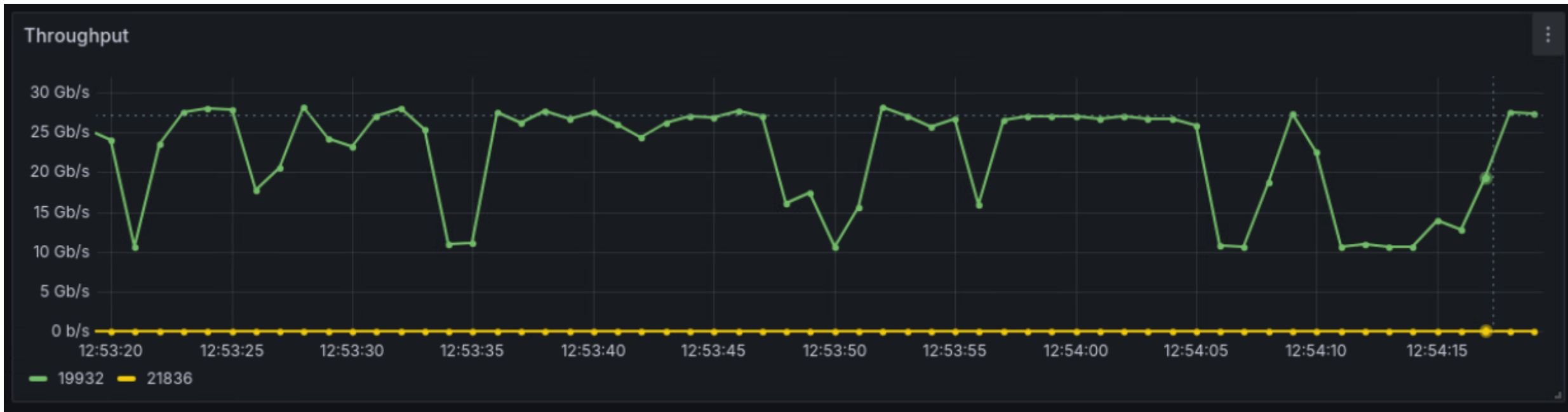


# Control Plane



# Data Collection and Visualization

- InfluxDB is used to store the measurements
- Grafana is used to query and visualize the measurements



# Conclusion

- The system utilizes the data plane to calculate and report per-flow statistics and the control plane to initiate reporting events
- Reports are packets with a custom header structure that carry the statistics to the collector
- The data plane appends the statistics and the required metadata to the custom headers
- Adding a new metric is performed by adding a new header field to the custom header
- The control plane of a remote collector extracts the statistics from the headers of the reports
- InfluxDB and Grafana are used to store and visualize the measurements