



In-band Telemetry Through Programmable Data Planes

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Outline

1. Introduction
2. Graph Partitioned In-band Network Telemetry Heuristic
3. Results
4. Conclusion

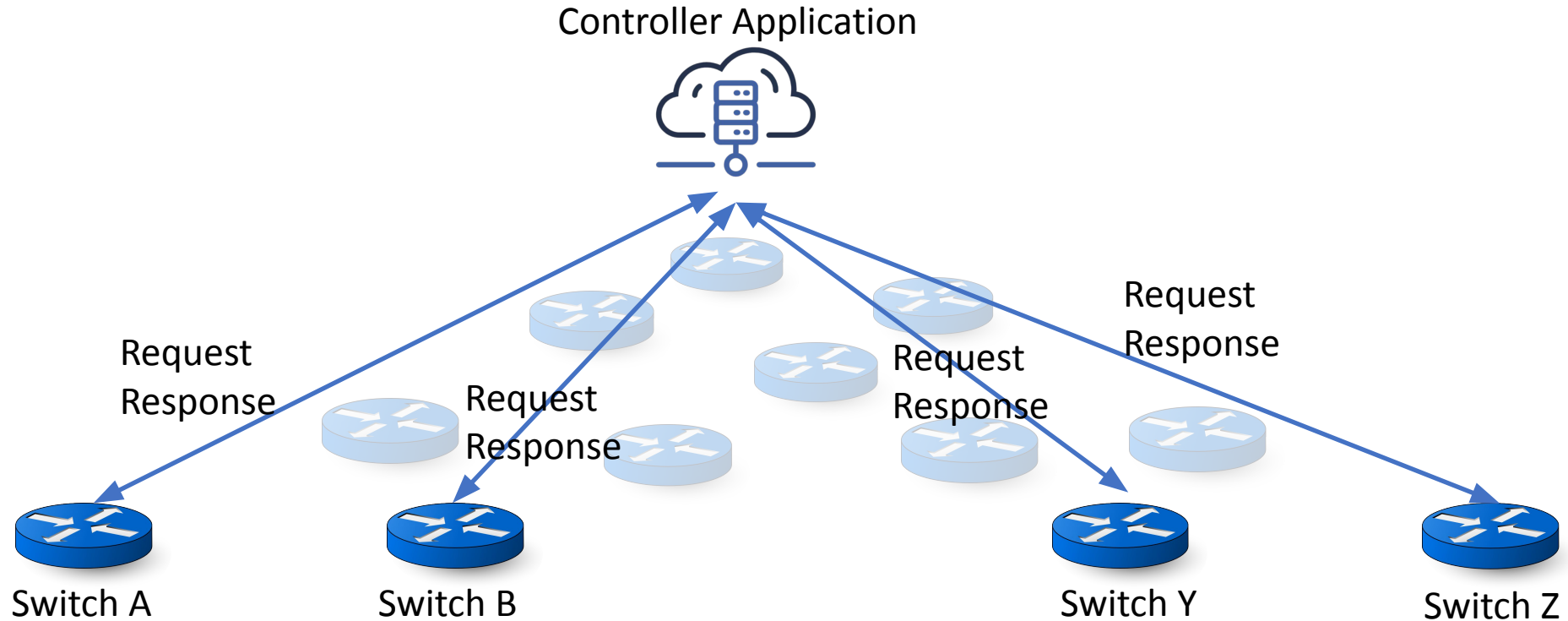
Importance of Network Monitoring

- Efficient network monitoring:
 - Provide up to date status information as quickly as possible with low overhead to applications such as:
 - Traffic engineering,
 - Troubleshooting,
 - Detection and mitigation of network failures and attacks.

Legacy Telemetry Solutions

PROBLEM

- High overhead
- Not customizable
- Limited telemetry data



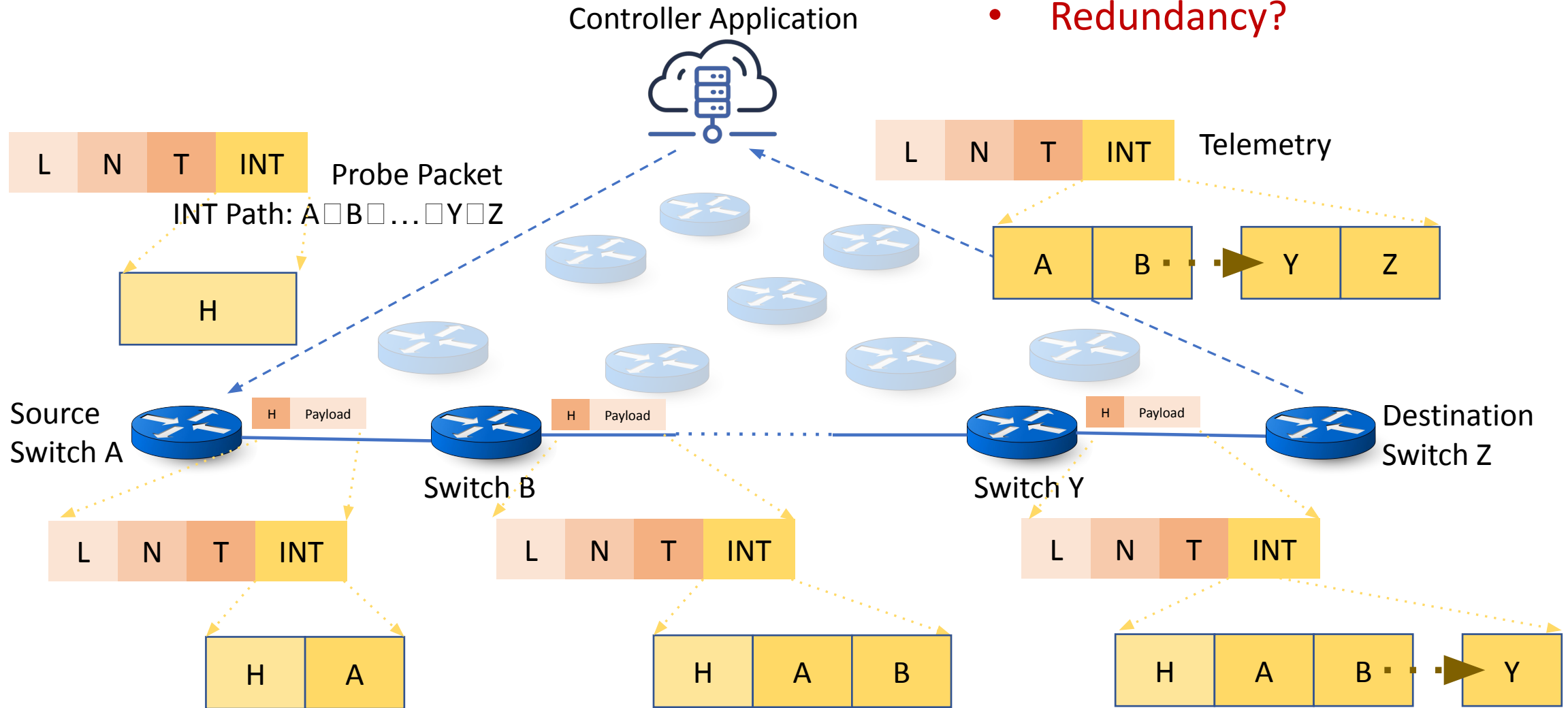
P4: Programming Protocol-independent Packet Processors

- Data plane description language that facilitates the customization of packet processing and forwarding pipelines,
- Allows on-demand protocol implementation or modification,
- Offers customization of available telemetry data pool.

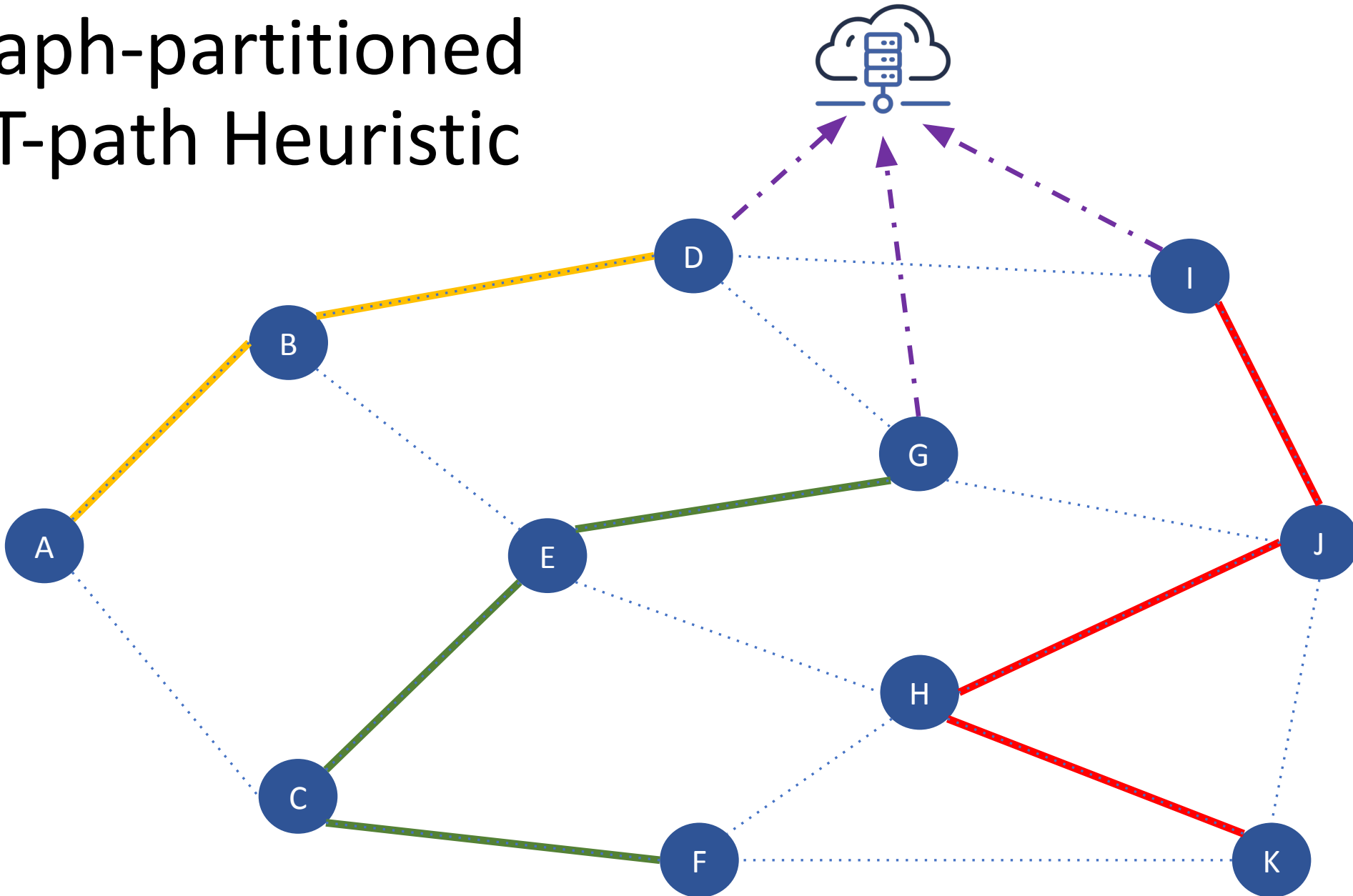
In-band Network Telemetry

PROBLEM

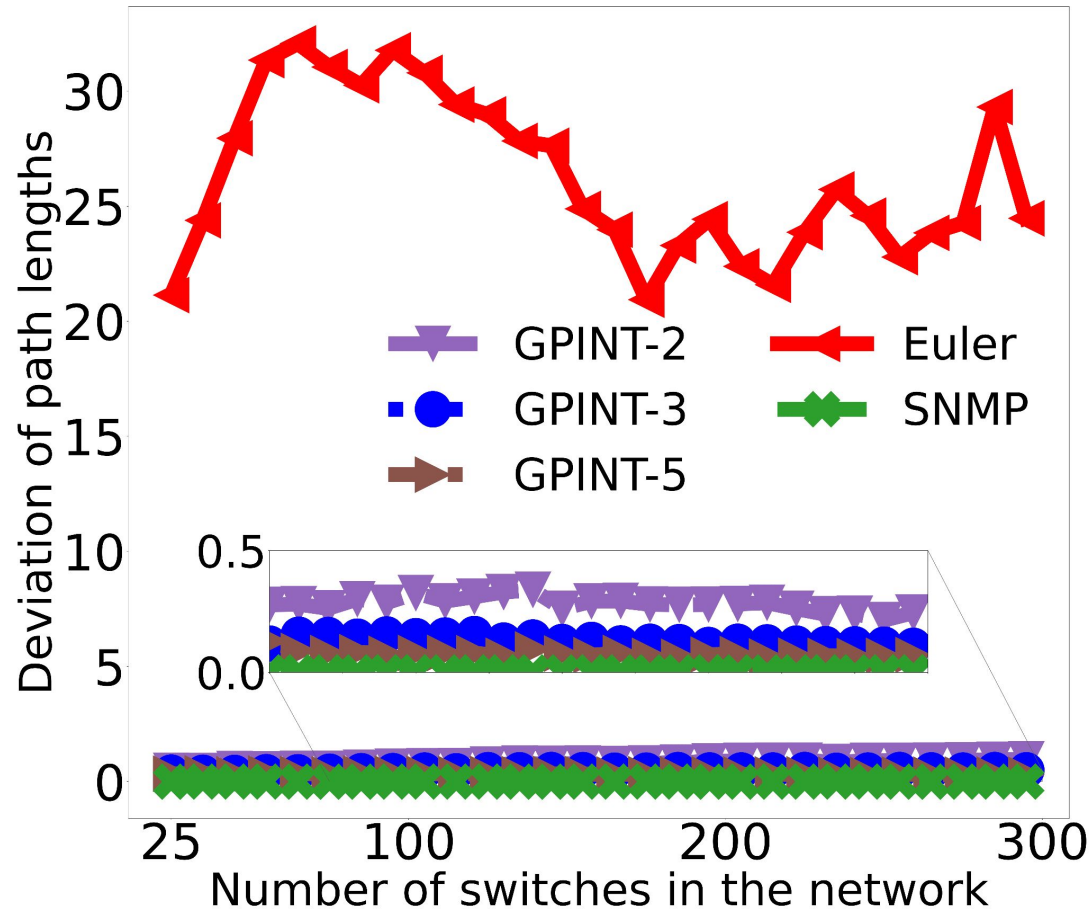
- How many paths?
- Age of telemetry?
- Timely delivery?
- Redundancy?



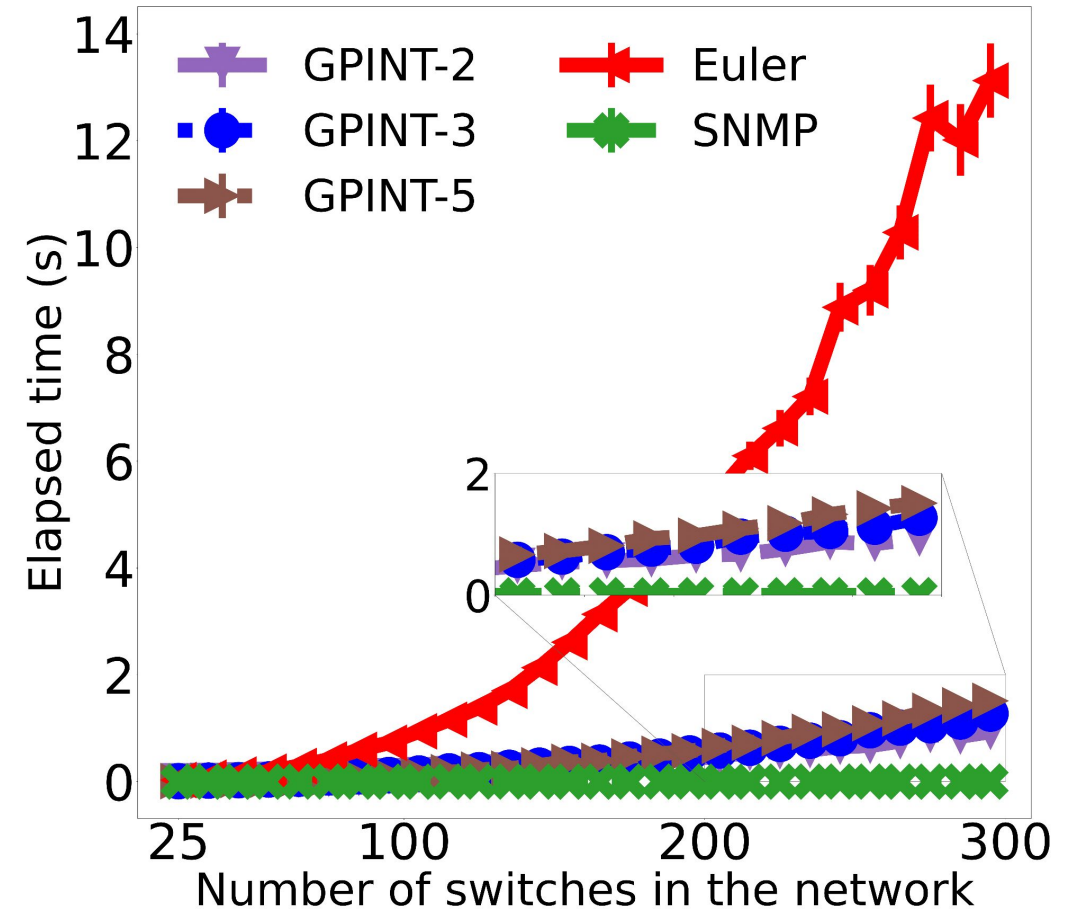
Graph-partitioned INT-path Heuristic



Results



(a) The length deviation of generated paths



(b) The elapsed time to generate solutions

Conclusion

- Defined three requirements to achieve efficient network monitoring using In-band Network Telemetry:
 - Minimized controller overhead,
 - Concurrent report delivery,
 - Minimized redundant information.

- In our latest work (not published yet):
 - Showed the importance of these requirements via simulations,
 - Pointed out some challenges of using In-band Network Telemetry and proposed certain solutions.

Questions?

THANK YOU!



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