Programmable Network Telemetry with P4

Inband Network Telemetry (“INT”) is a framework that are interpreted as “telemetry instructions” by network devices. These instructions tell an INT capable device what state to collect and write into the packet as it transits the network. This thesis develops a programmable fine-grained network wide real-time monitoring platform that leverages the INT framework available inside programmable data planes. A key issue to consider is programmable monitoring support for different network slices as different slices may have varying monitoring requirements. The integration of telemetry data with the SDN controller will enable to run network wide analytics on fine grained monitoring information in order to identify potential congestion or security threats in advance. In the intended approach, the control plane can program the monitoring framework in the data-plane, which node to inform the controller about specific events.

By developing a programmable packet probing framework for INT, you have to research how P4 can be used to track the available end to end path capacity inside a datacentre along with its latency.

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