5th P4 Workshop Demo Proposal (June 5, 2018)

Title
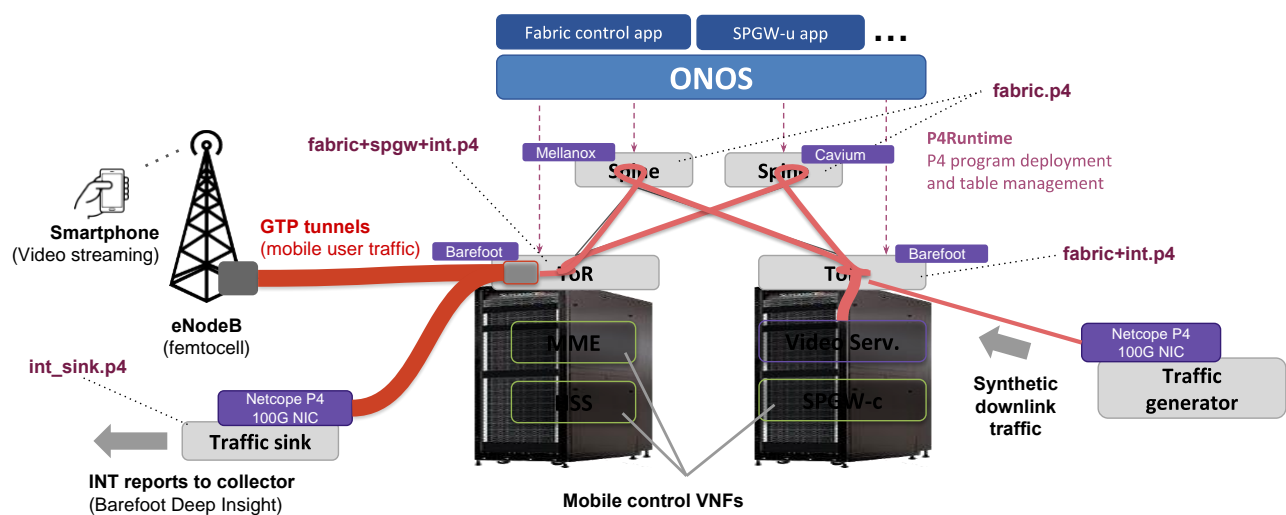
VNF offloading on a multi-vendor P4 fabric controlled by ONOS via P4Runtime

Presenter

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Abstract

We demonstrate advances in the design and implementation of P4-based systems for the service provider use cases. First, we show fabric.p4, a leaf-spine data center fabric controlled by ONOS via P4Runtime. Fabric.p4 can run on both programmable and fixed-function silicon from different vendors (Barefoot, Cavium, and Mellanox). We use it as the switching fabric of CORD, an NFV platform for the service provider access and cloud services. Second, we demonstrate spgw.p4, a P4-based implementation of the mobile Serving and Packet Gateway user plane (SPGW-u) VNF. We integrated spgw.p4 into fabric.p4 and we use it to perform GTP tunnel termination directly in the switching fabric of M-CORD, the CORD variant for mobile access. Finally, to demonstrate the performance of the system, we extended the fabric+spgw pipeline to add INT transit capability, and we integrated P4-programmable SmartNICs (from Netcope) to perform INT sink functionality. We use INT to show that it requires only a few nanoseconds to perform GTP encapsulation when processing 100 Gbit/s of synthetic mobile user traffic.

Demo architecture