Dynamic aggregation of traffic flows in SDN Applied to backhaul networks

A challenge in the adoption of the OpenFlow (OF)-based SDN paradigm is related to the limited number of OF rules supported by the network devices. The technology used to implement the OF rules is TCAM, which is expensive and power demanding. Due to this, the network devices are either very costly or they can support a very limited number of OF rules. One way to cope with this limitation, is to perform the same logic but with fewer OF rules in the devices. As a demonstration of this operational strategy, the current paper proposes a service for traffic flow aggregation which reduces the number of OF rules needed in the network devices, without impacting the control plane logic. The proposed traffic flow aggregation service is tested on a set of topologies specific to the backhaul network, since they aggregate a large amount of traffic flows. The results illustrate significant reductions in the number of OF rules in network devices, thus a lower demand on TCAM capacity.