Load Balancing for Management Multicast Traffic in SDN using Real-Time Link Cost Modification

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Abstract Network devices such as switches, routers, etc., are inflxible and cannot deal with different types of network traffic due to the underlying hardwired implementation of routing rules and other obstacles. SDNs and new communication protocols like OpenFlow are overcoming those problems. With the introduction of SDNs and OpenFlow as novel approaches for better network management and virtualization, it is now easier to perform QoS measurement any, anytime, and anyplace through the use of self-directed, self-tuning mechanisms that continuously monitor and measure network performance and react swiftly to problems. Using programmable interfaces to OpenFlow controllers, software-defined measurement solutions provide consistent traffi measurement of flw parameters such as bandwidth, packet loss, and latency to support the diversity requirements of next generation network applications and services. Furthermore, traffic measurement in SDNs allows for an indirect, non-intrusive, and statistical way to infer several characteristics that in some cases cannot be measured in traditional large networks. Before discussing these software-defied measurements, we present a brief overview of SDNs and the OpenFlow protocol. Also In this paper it has been propose an approach for applying traffic load balancing to multicast traffic through real-time link cost modification in a software defined network (SDN) controller. We present an SDN controller architecture supporting traffic monitoring, group management, and multicast traffic routing. An implemented prototype is described, and this prototype is used to implement shortest path multicast routing techniques which make use of the real-time state of traffic flows in the network. This prototype is evaluated through experimentation in Mininet emulated wide area networks. Evaluation is presented in terms of resulting network performance metrics focusing on the distribution of traffic flows. This indicates that SDN enables the use of real-time modification of link cost

functions as an effective technique for implementing traffic load balancing for multicast traffic.