Design and Implementation of the Service-Aware Traffic Engineering (SATE) in the LISP Software-Defined Wireless Network (LISP-SDWN)

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***Abstract*— Software Defined Wireless Networks (SDWN) have been considered to have a feasible architecture that enables the fast deployment of new services and solutions in response to the explosion in the number of users and network traffic. Currently, the telecommunications sector is ensuring flexibility in network management and configuration. However, fluctuations in traffic are still beyond the control of SDWN providers. This paper suggests ways to manage fluctuations of traffic with service type. We propose the design of a service-aware network management service that achieves the maximum network utilization among heterogeneous Radio Access Networks (RANs) as a form of Traffic Engineering (TE). In this paper, we implement and test the Service-Aware Traffic Engineering (SATE) that distributes the network traffic to RANs according to the service type of traffic in the network layer. The traffic shift latency (e.g., from an LTE RAN to a Wi-Fi RAN) is considered as a performance metric that does not affect the end-to-end latency of some network applications (e.g., VoIP), and it is 3.51ms from our testbed. Therefore, it might not affect the end-to-end latency of the VoIP application in the telecommunications. SATE is implemented using OpenDaylight (ODL) and Ingress/Egress Tunneling Routers (xTRs) running on Vector Packet Processing (VPP).**

***Index Terms*— SDN, SDWN, LISP, Traffic Engineering, Service-Aware, OpenDaylight, VPP**

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