ABSTRACT

Software Defined Networking (SDN) facilitates the management and the dynamic configuration of the network, however, the ability to quickly respond to failures in a short period of time is also essential in large networks. Considering that networks are increasingly using the SDN concept, it is important to study the methods of resilience in this type of network. The process of detecting link failure, communicating it to the controller, and recalculating the new shortest paths can result in a long recovery time. This recovery time should be short so as not to compromise the services offered. In this dissertation, we analyze methods of resilience that allow the reduction of delay, jitter and the packet loss in case of failures. The methods analyzed use preconfigured flows, Bidirectional Forwarding Detection (BFD) and link aggregation through the LACP (Link Aggregation Control Protocol) deployment. With the aforementioned mechanisms it is possible to increase network reliability by reducing packet loss by up to eight times. In addition, the stability of the network is increased by reducing about 0.8 ms of the jitter and 3.2 ms of the RTT in comparison to scenarios without the implemented resilience methods.

Keywords: SDN. Resilience. Failures. Recovery.