Analysis of Traffic Engineering capabilities for SDN-based Data Center Networks

In recent years, more and more existing services have moved from local execution environments into the cloud. In addition, new cloud-based services are emerging, which are characterized by very stringent delay requirements. This trend puts stress on the existing monolithic architecture of Data Center Networks (DCN), thus creating the need to evolve them. Traffic Engineering (TE) has long been the way of attacking this problem, but as with DCN, needs to evolve by encompassing new technologies and paradigms. This paper provides a comprehensive analysis of current DCN operational and TE techniques focusing on their limitations. Then, it highlights the benefits of incorporating the Software Defined Networking (SDN) paradigm to address these limitations. Furthermore, it illustrates two methodologies and addresses the scalability aspect of DCN-oriented TE, network and service testing, by presenting a hybrid physical-simulated SDN enabled testbed for TE studies.

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