

209. MANAGING AND CONFIGURING NETWORK THROUGH SOFTWARE DEFINED NETWORK

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General networking protocols struggle to meet the scalability and performance requirements of data centers. Viable replacements have been proposed for data center ethernet (DCE): link-layer Multipathing (MP) is deployed to replace spanning tree protocol (STP) and thus improve network throughput; end-to-end link-layer congestion control (CC) is proposed to better guarantee loss-free frame delivery for networking. Instead of using two separate parameters, i.e., path load and buffer level, to trigger and monitor the network our solution does the network management in an integrated way. To minimize overhead and accelerate update, SDN techniques are employed in our implementation, which decouples routing intelligence from data transmission. Hence, data sources can react more rapidly to congestion and network can be guaranteed with loss-free delivery, traffic can be more evenly distributed along multipath, resulting in better bandwidth utilization. Simulation results show that our combined solution can further improve network throughput with FFD mechanism and guarantee loss-free delivery with integrated CC.

Index Terms – Software Defined Networks, Multipathing and Congestion Control.

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