HPSRouter：A High Performance Software Router Based on DPDK

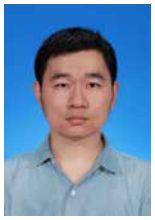
Zongyao Li [a]

[a] School of Electronic Information and Electronic Engineering, Shanghai Jiao Tong University, China

lizongyao12@sjtu.edu.cn

***Abstract*—All aspects of human life have been changed by Internet at an unprecedented rate. And the network appliances has exploded. They bring a series of management problems. In 2012, many large carriers initiated an effort, called Network Function Virtualization (NFV), to replace hardware network appliances with software implementations running in VMs. This approach enabled Network Functions (NFs) to be run on commodity servers. The road to convert hardware middleboxes to software network functions, has never been smooth. The performance gap between software and hardware seems insurmountable when packets are processed through Linux stack. The emergence of data plane development kit (DPDK) brings the chance of bridging the gap by bypassing the Linux kernel stack. We establish a high performance software router based on DPDK framework to offer a solution to the problem and tune the performance to approach the line rate of our 40 Gb network interface card (NIC) using batching, prefetching and affinity technique. We build our system in our four sockets commodity server equipped with 40 Gbps Ethernet interfaces and show that HPSRouter can reach the line rate.**

***Keyword*—DPDK, High Performance, NFV, Software router, Tuning**



Li Zongyao received the B.S. degree in software engineering from WuHan University. He currently purses the M.S. degree in the school of software engineering in ShangHai Jiao Tong University, Shanghai, China. His research interests are mainly focus on cloud computing, high performance network, network function virtualization and software defined network.