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High-Performance Packet Processing with Programmable Data Planes

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As telecommunication networks grow increasingly complex and data transfer rates soar, traditional networking equipment struggles to provide the necessary flexibility, visibility, and performance. This presentation explores our recent efforts to leverage programmable data planes for high-performance packet processing in non-enterprise networks. Our approach enables the handling of custom packet headers and protocols that are not supported by off-the-shelf hardware. We detail the hardware platform and techniques employed to achieve line-rate processing at up to 12.8 Tbps, ensuring efficient, scalable, and flexible network operations. These innovations offer practical solutions to the challenges posed by modern high-speed networks, bridging the gap between software-defined networking and specialized hardware performance.

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