MAR 2021 • SOFTWARE

PacketMill: Toward Per-Core 100-Gbps Networking - Artifact for ASPLOS'21

Artifacts Evaluated & Functional / v1.1

Artifacts Available / v1.1

Results Reproduced / v1.1

Authors/Contributors: Alireza Farshin, Tom Barbette, Amir Roozbeh, Gerald Q. Maguire Jr., Dejan Kostić Authors Info & Affiliations

Related Articles: PacketMill: toward per-Core 100-Gbps networking

DOI: https://doi.org/10.5281/zenodo.4435970 **Version:** 1.0

Description

This is the artifact for the "PacketMill: Toward per-core 100-Gbps Networking" paper published at ASPLOS'21.

PacketMill is a system that optimizes the performance of network functions via holistic inter-stack optimizations. More specifically, PacketMill provides a new metadata management model, called X-Change, enabling the packet processing frameworks to provide their custom buffer to DPDK and fully bypass rte_mbuf. Additionally, PacketMill performs a set of source-code & intermediate representation (IR) code optimizations.

Our paper's artifact contains the source code, the experimental workflow, and additional information to (i) set upPacketMill & its testbed, (ii) perform some of the experiments presented in the paper, and (iii) validates the reusability & effectiveness of PacketMill.

For more information, please refer to https://github.com/aliireza/packetmill

Instructions

General Installation

Hardware Dependencies:

PacketMill's metadata management model (X-Change) only supports MLX5 driver in DPDK. Although MLX5 driver is used by several Mellanox NICs, we have only tested Mellanox Connect-X 5 NICs. To perform PacketMill's experiments, you need two servers (preferably with Xeon processors) equipped with Mellanox Connect-X 5 NICs and interconnected via a 100-Gbps link.

General Installation:

PacketMill's README.md (https://github.com/aliireza/packetmill/blob/master/README.md) describes the testbed preparation, installation process, and the experimental workflow to use PacketMill and perform different experiments.

Provenance

Our artifact provides some scripts to perform some experiments with synthetic traces (i.e., using fixed-size packets) to validate the reusability and effectiveness of PacketMill, where it uses NPF tool and FastClick. Please check https://github.com/aliireza/packetmill/tree/master/experiments for more information.

License

free