DPACC Acceleration Progress and Demonstration

DPDK on Axxia ARM hardware for DPACC

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Demo of DPDK on ARM

Using Axxia ARM hardware with DPDK to get the best performance

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What is the demonstration?

- The goal of the demo is to show DPDK running on ARM hardware with good performance
- We have ported DPDK to the Axxia ARMv7 hardware and integrated the Axxia SoC hardware
- The demo shows that DPDK is similar in performance to the native SoC environment

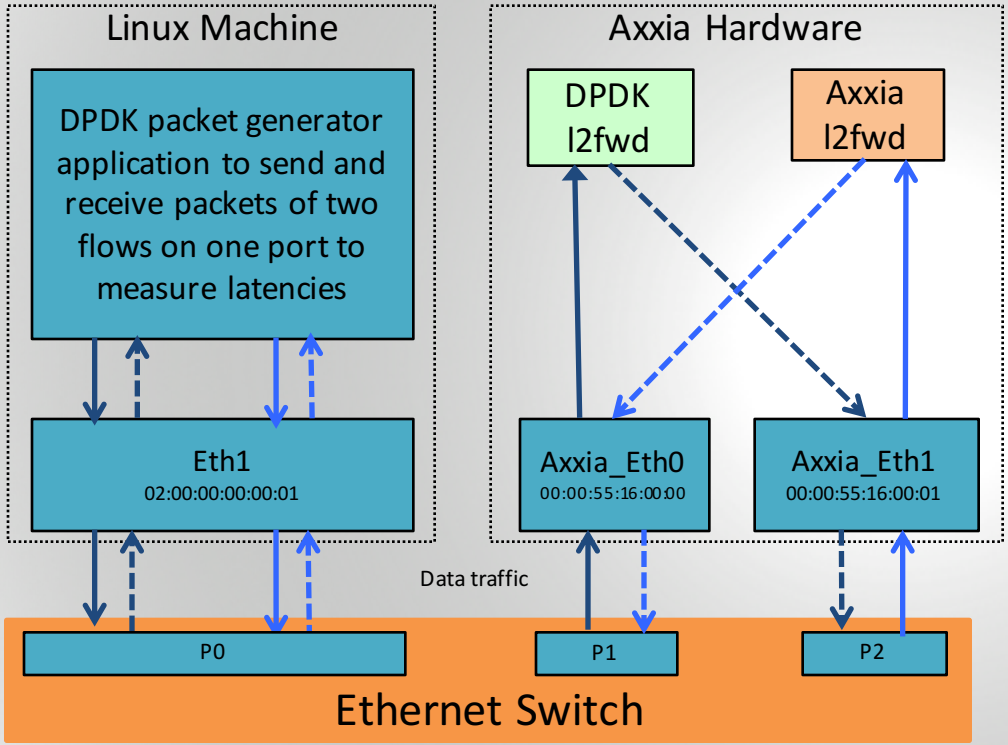
DPDK ported to ARM, why?

- DPDK was ported to ARM hardware to demonstrate how portable DPDK is to any platform
- The port only took a few days to get running on the Axxia platform (not optimized yet)
- Next few days we integrated the Axxia SoC drivers
- Demonstrating DPDK was easy and quick to run on any platform
- Plus DPDK on ARM hardware shows performance similar to the native SoC application

How the port of DPDK was done

- DPDK contains infrastructure to add different platforms in the EAL layer
  - A new platform was created for ARMv7 that used generic C built-ins or ARM assembly code to support platform specific functions
- DPDK also supports virtual PCAP based PMDs and test applications
  - Using them, the port could be validated easily and quickly
- Addition of a virtual PMD is straight forward for DPDK
  - A new virtual PMD was added to create Ethernet devices abstracting Axxia ports
  - DPDK's APIs could be supported by using Axxia specific SDK calls underneath
- No change was done in any sample/test application of DPDK to run them using the new Axxia PMD

DPDK on Axxia Environment



DPDK based packet generator and receiver applications, which also computes latency

Flow 0 – Traverses via DPDK

SMAC – 02:00:00:00:00:01
DMAC – 00:00:55:16:00:00

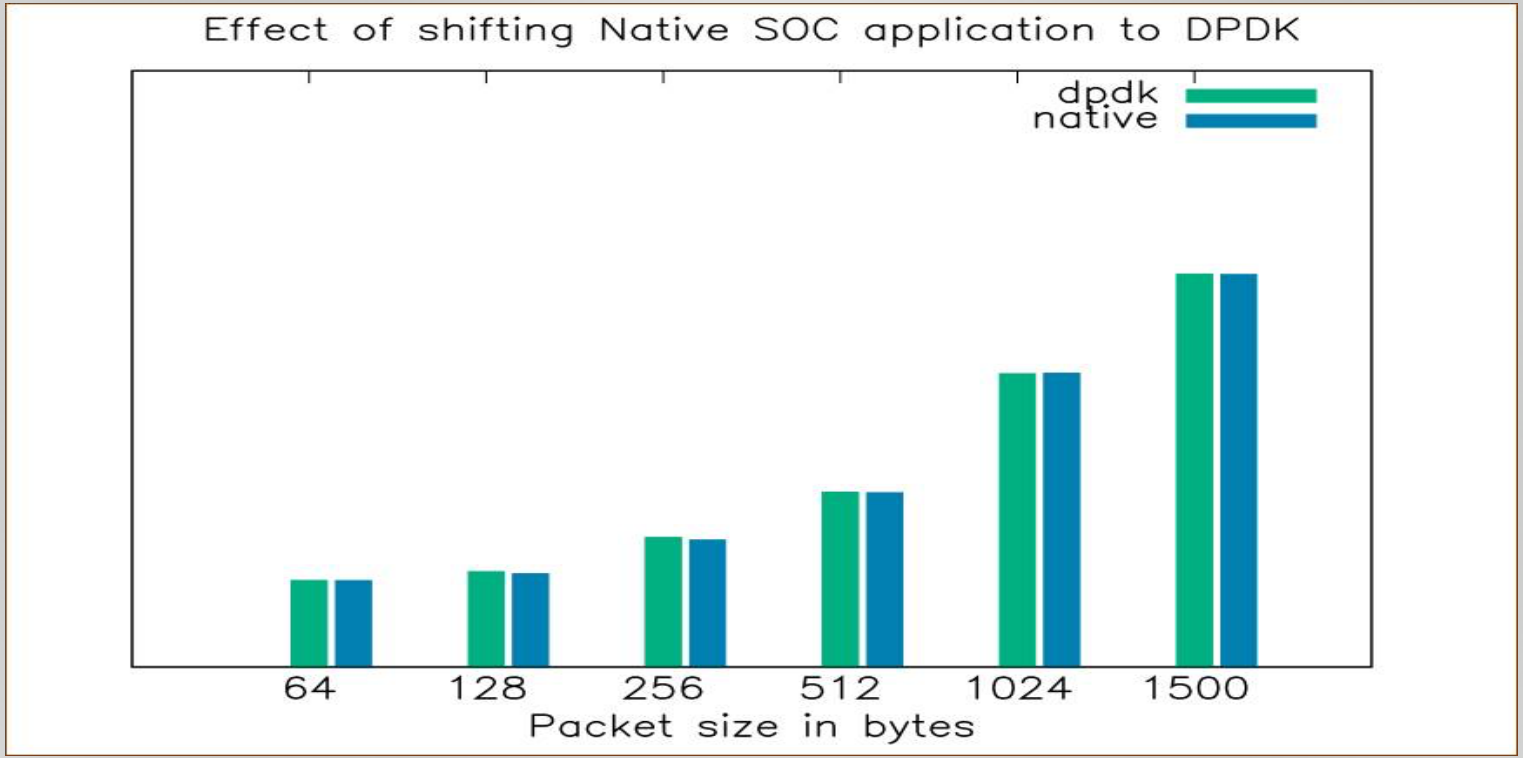
SMAC – 00:00:55:16:00:01
DMAC – 02:00:00:00:00:01

Flow 1 – Traverses via Axxia SDK

SMAC – 02:00:00:00:00:01
DMAC – 00:00:55:16:00:01

SMAC – 00:00:55:16:00:00
DMAC – 02:00:00:00:00:01

Graph of DPDK compared to Axxia Native SoC software



Summary

- The goal was to show DPDK does not add any overhead in performance compared to a native acceleration SDK
- We created a ARMv7 port, which we have pushed up stream to DPDK.org
  - The port needs to be optimized, but the port shows we still obtain good performance compared to a native design
- The effort for the ARMv7 port and the comparison of two systems was a reasonable amount of time (couple of months)
- Integrating to ARM and a vendor SDK for DPDK provides good performance and minimum overhead

DPDK on ARM for DAPCC

Questions?

Answers: 42 or 47 take your pick ☺

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Thank you for Attending!

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