



Contribution ID: 66

Type: **Short talk**

DPU Offloading with OpenMP Programming Model

Wednesday 22 March 2023 14:30 (10 minutes)

Recent advancements in High-Speed NICs have gained a speed of 400 Gbps and achieved the status of Smart-NICs by enabling offloads for cryptography and virtualization. Data Processing Units (DPUs) are taking this development further by integrating performant processing cores on the SmartNIC itself.

The DOCA API for programming BlueField DPUs requires proficiency in network technologies. We are enabling BlueField DPU capabilities in the OpenMP programming model. The enablement of OpenMP Target Offload features for BlueField DPUs will contribute to accessibility to a wider range of users. It will be an opportunity for the HPC community to leverage DPU features for a wider range of existing and emerging applications. We will be demonstrating DPU features by accelerating workload employing domain decomposition by offloading halo exchange operations to BlueField DPUs.

JLESC topic

OpenMP, BlueField, DPU, In-Network Computing, Offloading

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Session Classification: Short Talks on Advanced Architectures

Track Classification: Programming languages and runtimes