Master Thesis – SDN on classic NPUs

Background
At Ericsson we develop several products that use ordinary Network Processing Units, NPUs for IP forwarding. They usually employ classic routing protocols with proprietary data planes and custom integration. The reference product in this thesis is currently exposing a proprietary user interface north bound and it is a classical router. In the networking world today there is a strong push towards Software Defined Networking (SDN) and we need to understand how to transition to an SDN enabled architecture.

Thesis Description
Investigate how to integrate a classic NPU based product, such as a router or switch in SDN architecture. Build a limited prototype, probably with OpenVSwitch as a “role model”. Investigate what tools can be used to accelerate the OpenVSwitch dataplane.

- What OpenVSwitch dataplane API should be used? Is Open Dataplane a suitable tool for acceleration?
- Benchmark small use cases and suggest modifications to the NPU APIs to make the integration better.

The outcome of the work should be a limited prototype being able to do basic IPv4 forwarding with the help of an SDN controller. It should also include a detailed report with benchmark figures and recommendations on a future architecture.

Qualifications
This project aims at students in electrical engineering, computer science, computer engineering or similar.

Extent
2 students, 30hp each

Preferred Starting Date
Autumn 2015

Keywords
C++, SDN, Programming, Linux, IP

Contact Persons
Johan Moe
+46 10 711 4894
johan.moe@ericsson.com