Master Thesis – RAN Resource Utilization for Virtualized Packet Processing

Background
Ericsson offers the option for 5G Radio Access Networks to be deployed on virtualized platforms in cloud environment. The Ericsson virtualized solution for user plane processing is called vPP and its primary purpose is to deliver end-user data at rates fit for the bandwidth need in the 5G solutions. The end-user data is supplied via a network of Radio Nodes, where the vPP is providing just-in-time delivery based on flow-control algorithms. Evaluating the hardware resources required for vPP depending on end-user behavior is a challenge that requires an enhanced understanding of the impact from the end-user behavior and the flow-control towards Radio Nodes on the hardware resources.

Thesis Description
The following steps are envisioned as part of the thesis work:

- Investigate how end-user traffic patterns should be parameterized to be suitable input to vPP resource utilization prediction.
- Identify and implement a model (preferably in Python) for the HW related resources consumed by a vPP for processing end-user data and executing the flow control to Radio Nodes based on the parameterized traffic model. The HW related resources could be CPU time, memory use, or perhaps something completely different identified during the thesis work.
- Perform model validation/benchmark against known product performance by verifying the model with an Ericsson vPP deployment.
- The findings from the study will influence how similar tasks are solved for a wide spectra of Ericsson Radio Access Network solutions.

Qualifications
This project is targeting students in computer science, electrical engineering or similar fields.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2020

Keywords
Cloud, x86, C++, Python, Mobile Telecommunication, Optimization

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