Master Thesis – Internal R&D Network Analysis

Background
Ericsson has more than 20,000 engineers working in R&D with development and test of Ericsson products. This products development is highly dependent on connectivity between systems under development/test and the development environment. With the amount of mobile system products and generations supported (5G-2G), the geo distribution of test systems etc. lead to a multitude of connectivity use cases that need to be supported in a flexible and secure way. Ericsson has invested in and implemented a geographically distributed network used in the R&D context. Due to the implemented characteristics and variations in the use cases, it has become a larger challenge to really understand the complete traffic pattern scenarios from a capacity, classification, and the real use of the underlying infrastructure.

Thesis Description
The intention with this thesis is to perform an analysis of network traffic patterns using existing tool set and possibly develop new/ or enhance existing processes and tools and as a result provide input to network planning, capacity management, operations, and architecture functions with the goal to increase security, reduce overcapacity and remove or consolidate non or little used network infrastructure.

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

- Investigate, analyze network traffic patterns in the network environment with the objective to provide insight to use patterns that either consume excess of resources or capacity that is not used at all.

- Investigate and analyze use of external web sites with the objective to provide insight to what whitelisted web addresses have been implemented and which ones are in use.

- Investigate and analyze WAN link R&D traffic utilization. Ericsson global network has a specific routing domain that operates over a MPLS VPN, which is only used for R&D type of traffic. The objective is to identify link candidates that could be subject to reduction or maybe complete removal.

- Network management has a variety of tools and information collection solutions in use. So, the expectation is that the thesis will include recommendation on what capabilities are missing and how they could possibly be fulfilled. This could also be Proof of Concept items developed as part of this thesis.

The thesis will be concluded with a result presentation for the Ericsson team.

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Qualifications
This project aims at students in electrical engineering, computer science, computer engineering or similar. Deeper knowledge in IP network protocol and use of ELK / Wireshark is preferred.

Extent
1-2 students, 30hp each

Location
Ericsson AB Linköping or Kista

Preferred Starting Date
Spring 2022

Keywords
ELK, TCP/UDP, IP, Routing, Wireshark, Firewall, Network, MPLS, BGP

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