Chair of Network Architectures and Services
School of Computation, Information, and Technology
Technical University of Munich

TUM

Thesis B.Sc.

Thesis M.Sc.

Guided Research

On-the-fly attachable Network Analysis

Motivation

Industrial machines and scenarios rely on real-time requirements within their networks. For adding new devices or performing an individual software update, analyzing the traffic is necessary [1, 2]. Current options are to use the device statistics of connected devices or analyze pre-recorded traffic.

This theses aims to build a hardware and software solution to analyze traffic parameters such as used bandwidth and holding cycle times on-the-flight within the network using mirrored ports and a Rasberry Pi [3] as device. The results need to be presented in real-time using a web application to allow simple and on-demand analysis of networks and their parameters.

For testing purposes, the analysis of pre-recorded traffic and data generated on our Testbed is possible. Further scenarios require that the solution can be plugged-in and out on-demand and as needed. The analysis is only done using passive measurements.

Your Profile

- General interest in computer networks
- Experience with Linux and Lua programming
- Experience with Rasberry Pi

Your Tasks

- Conducting research on on-demand real-time network analysis
- Analyze current solutions for traffic analysis
- Developing a new solution to analyze traffic in real-time on-demand
- Evaluate the prototype and its benefits

Literature

[1] P. S. Marshall and J. S. Rinaldi. *Industrial Ethernet*. ISA, 2004.

[2] M. Popp. Das profinet io-buch. *Berlin· Offenbach: VDE VERLAG*, 2010.

[3] E. Upton and G. Halfacree. *Raspberry Pi user guide*. John Wiley & Sons, 2016.

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