

SDN Controllers in Smart Factory

Master thesis project at RISE SICS Västerås.

Description

This thesis work is defined in the scope of the READY project (Research Environment for Advancing Low Latency Internet, <https://ready-sidus.se>). This project aims at reducing latency in various networks, services and applications. Interactive services are disrupted for shorter or longer periods of time, and it becomes hard to deliver media services with low latency. Web services suffer from long delays per transaction which is frustrating for end users because of long waiting times and bad interactivity.

Wireless sensor networks (WSNs) are the main building blocks of IoT applications by providing sensing and communication capabilities. IoT applications are enabling connectivity through sensor networks. Smart factory is the current trend of automation and data exchange in manufacturing, where it involves IoT technologies. There are some standards and protocols implemented for industrial automation. REALFLOW is a routing protocol designed for industrial applications in order to support reliable communication by providing multipath routing strategy, however, it lacks immediate routing updates during network changes. This issue can be targeted by applying SDN controllers.

Problem statement

Current standard SDN networking have been designed and implemented for wired networks. There are some efforts on implementing SDN for wireless communication. This Thesis aims to develop and test an SDN enabled solution especially for WSNs.

Main outcome

This Thesis must provide some solution for connecting an existing SDN controller to the REALFLOW routing protocol for industrial applications.

Tasks

- Review the existing SDN solution in wired and wireless domain
- Connecting SDN controller to the REALFLOW (developed in OMNeT++)
- Evaluation and testing the performance of the network.

This thesis is suitable for 1-2 students.

Qualifications

To be successful in this thesis work the candidate(s) would need the following:

- MSc studies in Computer Science or similar area.
- Excellent programming skills in C/C++
- Good knowledge of wireless communication systems
- Be fluent in English.

Contact person

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Application

To apply please send your CV along with the list of courses you have taken and their grades to maryam.vahabi@mdh.se or ali.balador@ri.se. In your CV provide a short description of previous projects that you have done.