



Master thesis No. 993

Tradeoff-aware Service Deployment in a Mixed Edge and Cloud Computing Environment



Methods

Prototype implementation
Measurements
Performance Evaluation

Topics

Communication networks
Computer architecture

Industry 4.0 solutions will introduce a significant increase in processing load along with a vast amount of data. A solution can be provided by cloud services which run on servers with powerful processing capabilities.

However, the remote cloud approach has the problem of an increased latency which can be overcome by adding powerful servers at the edge of the network. A mixed architecture, utilizing both cloud and edge concepts, will benefit from the diverse services provided by a cloud platform and the low latency enabled by an edge platform.

The main focus of this thesis is to analyze the benefits and tradeoffs for offloading of different application classes with various processing requirements on different computing setups including bare-metal execution, edge servers, cloud computing and a mixed setup of edge and cloud servers.

On the basis of lab measurements and complexity modelling, a theoretical concept for the relationship between application complexity, offloading gain and computation environment shall be developed.

Requirements

Programming Experience in C++
Programming Experience in Java

Desirable knowledge

Kommunikationsnetze I
Computer Engineering I

Contact

Prof. Dr.-Ing. Andreas Kirstädter
room 1.345 (ETI II), phone 685-68060, E-Mail andreas.kirstaedter@ikr.uni-stuttgart.de