

Abstract

It can be observed that the manufacturers provide more and more safety and comfort features for their motor vehicles in the automotive industry. These electronic control units (ECU) of these features cooperate with each other and like distributed systems, they make their own tasks. Design of the individual functions are making at various developer groups. It has made it necessary that in electronic control unit use standardized software component. Therefore the largest automotive companies created the AUTOSAR consortium which deals with the standardizing of the software components, what running on control units of cars.

I present the implementing of two AUTOSAR software components – which deal with communications. One is the Ethernet interface module another is the TCP / IP module. In the first part of the thesis I provide a brief overview of the used communication protocols and after that I select an open source TCP/IP stack (LWIP), which I placed the AUTOSAR software architecture.

I continue the work with creating the missing layers of previously developed software architecture. I show Ethernet-based communication with AUTOSAR software components via the presentation of Ethernet interface. I illustrate the fitting and using of LWIP in the chapters of 4, 5 and 6, where I compare the operation of the required standard with the achieved operation. After that, I do a kind of evaluation of this software.

In the last chapters of my dissertation, I present the initial steps of my own TCP/IP stack, implementation what was done with minimum requirements.

The ARP, UDP protocols and a part of the IP protocol are implemented. Finally, I close my work with testing and trying the completed TCP / IP stack.