

MICROSAR Ethernet Basic Course

Agenda VectorAcademy

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| Delivery Format: | This course is offered in Blended Learning Format. The content will be learned via E-Learning in a period of two months. Additionally, there will be one remote Q&A session per month that can be attended on a voluntary basis. |
| Duration: | 8 hours (aprox. needed time for self-study) |
| Target Group: | ECU developers who would like to enhance their knowledge about Ethernet |
| Prerequisites: | Knowledge about software development for automotive systems |
| Goal: | Obtain a first impression on the usage of Ethernet in an AUTOSAR based ECU. |

1. Overview and introduction

- > Motivation for Ethernet in vehicles
- > Difference to traditional vehicle networks
- > Protocols and history of Ethernet in AUTOSAR

2. Basics of Ethernet and TCP/IP

- > PHY: MDI/MII, most commonly used PHY layers and ECU Hardware setup
- > MAC/VLAN Data Link Layer addressing and Switches
- > Internet Protocol IPv4/IPv6 Network Layer addressing and routers
- > Transport Protocols (UDP, TCP), Transport Layer addressing
- > ARP, NDP, ICMP, DHCP

3. Ethernet in the AUTOSAR Software Architecture

- > Socket based communication using TCP/IP vs. PDU and signal based communication in traditional vehicle networks
- > Approach in AUTOSAR (SOAD + PDU Container)
- > AUTOSAR Software Architecture

4. Overview of Automotive Protocols and use cases

- > Requirements emerging from modern E/E architecture and distributed system approach
- > Summary of protocols SOME/IP(-SD), DoIP, TSN, AVB, XCP