

# Ethernet and IP Fundamentals – Application Layers

## Agenda VectorAcademy

<b>Duration:</b>	1 Day
<b>Target Group:</b>	Ethernet and IP users in vehicles
<b>Prerequisites:</b>	Basic understanding of serial data transmission. Knowledge about Ethernet IP, TCP and UDP.
<b>Goal:</b>	Knowledge of Application Oriented Protocols in vehicles: DoIP, SOME/IP, AVB/TSN, AUTOSAR IPDU and AUTOSAR NM

### 1 | Introduction 0.5 h

- > Motivation for Ethernet and IP in vehicles
- > Protocols and their application areas

### 2 | Diagnostics over IP 2.0 h

- > Introduction to DoIP and its use cases
- > Tester, gateway and nodes
- > Phases of a DoIP communication
- > DoIP packet and transmission of diagnostics services
- > DoIP compared to diagnostics via socket adapters

### 3 | SOA and SOME/IP 2.0 h

- > Introduction to Service Oriented Architectures (SOA)
- > Influences of SOA in automotive architectures
- > Introduction to SOME/IP and SOME/IP-SD
- > Types of services: Methods, events and fields
- > Use cases for SOME/IP and SOME/IP-SD

### 4 | Overview on Functions for Ethernet in AUTOSAR 1.0 h

- > Transmission of traditional signals via Ethernet
- > AUTOSAR IPDUs and container for PDUs
- > AUTOSAR IPDUs in combination with SOME/IP-SD
- > AUTOSAR network management via UDP NM

### 5 | AVB/TSN 1.5 h

- > Introduction to the AVB/TSN protocol family
- > Used protocols in the automotive area
- > Time synchronization in vehicles
- > Used transport protocols
- > Stream reservation and traffic shaping