

# Ethernet Fundamentals

## Agenda VectorAcademy

<b>Duration:</b>	1 Day
<b>Target Group:</b>	Ethernet users in the automotive industry
<b>Prerequisites:</b>	Basic understanding of serial data transmission

### 1 | The OSI Model

- > General descriptions of the layers
- > Automotive applications

### 2 | Physical Layer

- > Network architecture examples
- > Typical topologies

### 3 | IEEE 100Base-TX/1000Base-T

- > Components of an ECU
- > Media interface
- > Open Alliance BroadR-Reach
- > ISO 15118/IEEE 1901 Green PHY

### 4 | Data Link Layer

- > IEEE Ethernet MAC
- > VLAN: Virtual Local Area Network

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### 5 | Network Layer

- > Internet Protocol (IPv4/IPv6)
- > Properties
- > Addresses
- > Packets

### 6 | Transport Layer

- > User Datagram Protocol (UDP)
- > Transmission Control Protocol (TCP)

### 7 | Additional Protocols (Overview)

- > SOME/IP and SOME/IP-SD
- > Diagnostics over IP (DoIP)
- > XCP on Ethernet
- > Audio Video Bridging (AVB)
- > ISO 15118 Smart Charging
- > Vehicle to X (V2X)
- > Avionics Full-Duplexed Switched Ethernet (AFDX)