FaSTDa-Racing Darmstadt

Success Story – Data transmission out of the vehicle

FaSTDa-Racing from Darmstadt is the Formula Student Team of the University of Darmstadt. Next season, NetModule will take a ride in the newest racing car and supplying the latest vehicle data via LTE.

The Project

The FaSTDa-Racing team was founded in 2007 by a handful of motivated students. Since then it has grown rapidly and today consists of a large number of students from different faculties. FaSTDa has built ten cars with combustion engine and two fully electric cars.

In the new vehicle for the 2019 season, in addition to many technical improvements, the telemetry will also be professionalized - in particular the transmission of sensor data via the mobile network (LTE). Background for this decision: In season 2018, FaSTDa has had many negative experiences with WLAN, which is widely used in the Formula Student world. The main problems were the limited range and the susceptibility of the technology as soon as obstacles appeared in the terrain.

Therefore, the team looked for another technology that would allow both secure and reliable data transmission. They quickly opted for the mobile network, which provides a reliable connection in most regions.

«The Router from NetModule qualifies itself through its robust and compact design, as well as its weight and simple operation. Thus we can access the telemetry data without disadvantages, such as additional weight, without having to stand at the racing car.»

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Requirements

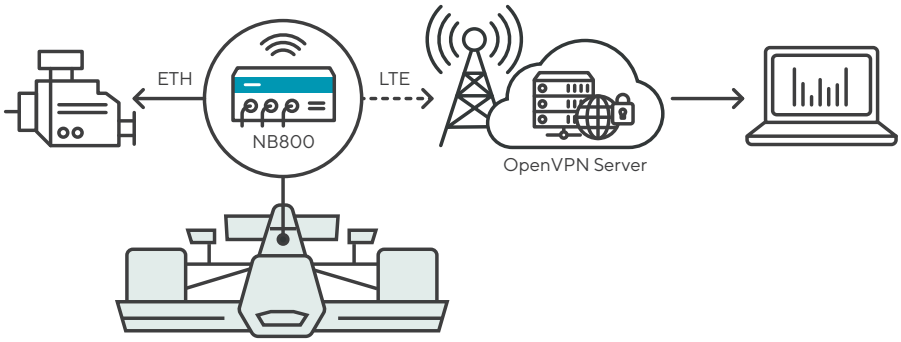
- Operation on low-voltage system (12V)
- Use of OpenVPN (secure transmission of data via the public mobile network)
- Low weight

Solution

After a short research, the FaSTDa-Racing Team came across the IoT-routers of NetModule, which convinced by their compact and robust design as well as their low weight. After consultation with the NetModule experts, the NB800 LTE & WiFi model was selected. To be able to use all functions of the router, the Antenna-Roof-2L2W with LTE and WiFi was added.

The compact NB800 is suitable for industrial use and can be powered with 12 volts. The router has an LTE and WLAN module as well as an Ethernet interface.

The NB800 was now installed in the vehicle and the engine control was connected to the router via Ethernet. The router has been configured as a VPN client and is operated in bridge mode. It thus serves as an «extended Ethernet cable» for the engine control, which has a static IP. The NB800 automatically connects to the OpenVPN server via LTE. The team's laptop, which is also connected to the server, can now read out the engine control information. Thanks to LTE and OpenVPN, secure and reliable data transmission is now guaranteed.



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