Success Story Jungfrau Railways

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The solution

NetModule enables vehicle-to-ground communication up to the highest train station in Europe at nearly 3500m altitude together with the integrator WLAN Partner and the antenna manufacturer Huber + Suhner. On the 50-minute trip with Jungfrau Railways through ice and snow, train drivers can exchange operational data with the central office and provide customer information screens. Passengers are entertained with significant details about the history of the rack railway to the Jungfraujoch. For this purpose, the KIS (Customer Information System) includes a central server, a screen and an intercom on the train.

Through this application-agnostic ground-vehicle networking modern transport services such as the Jungfrau Railways can easily operate their different applications and information systems via an integrated communication platform in the mobile vehicles and thereby dramatically reduce total cost of ownership. Since October 2014 in the Jungfrau Railways (Jungfraubahn, Wengernalp, Bernese Oberland Railway and Bergbahn Lauterbrunnen-Mürren) 43 railway routers of the type NB3710 are rolled out, with an option for another 10 units.

The partners and solution components

Today a single wireless router bundles all mobile data and voice communications, whereas many modems and SIM cards inside the trains and a forest of antennas on the roof were necessary for such communication solution in the past.

The professional model NB3710-2L2W-G with two LTE interfaces, two WLAN interfaces, GPS receiver and five port switch not only fulfils all common requirements, but also enables the realization of wishes that were not known at the project start, for example WiFi for passengers. Software upgrades are possible at any time by means of the SDK (Software Development Kit).

The vast functionality within a compact case at an attractive price is the USP of the device. Moreover NetModule proves great flexibility in customizing - so for this project the router software was extended in a short time with a new IPsec implementation including the Mobility and Multihoming Protocol (MOBIKE) defined by IETF RFC 4555. This enables multi homing for IPsec VPN with multiple LTE providers abroad and WLAN in the depot now even without additional Mobile IP layer.

While NetModule provides the router, Huber + Suhner, ensures best reception with its EN 50155 and EN 45545 certified rail antennas. The manufacturer develops and manufactures components and system solutions for electrical and optical transmission of data and energy and focuses on the communications markets, transport and industry. The products are characterized by highest quality, reliability and durability, even under demanding environmental conditions as in this project. The cloud-based fleet management system from WLAN Partner automates the configuration, monitoring and support of the entire communication solution. From a single interface, Jungfrau Railways will receive at any time real-time information on the utilization of the data network, the current location of the vehicles, the quality of cellular connection and the state of NetModule devices. WLAN Partner is also responsible for the engineering of the communications network for the development of the vehicles, the customer information system and the wireless cameras for monitoring stations. The company specializes in the development of reliable wireless networks for trains, buses and airports, where high speeds, reflections from vehicles and aircraft and disorders include by electronic devices carried on board to the main challenges.