

Danish State Rail Operator DSB Turns to GarrettCom for an In-Carriage Network Solution

A Surveillance & Security Application

A TRANSPORTATION SYSTEMS APPLICATION

Rail travel is becoming increasingly the transportation method of choice throughout Europe, and as a result train operators are trying to keep up with the times by improving performance, and customer satisfaction. The EN50155 standard for electronic railroad applications introduces stringent demands for reliability, covering humidity, extended temperature range (-40 to $+85^{\circ}\text{C}$), shock, vibration and power fluctuations. In addition, EN50155 prohibits the use of fans in train electronics: only passive cooling technologies are permitted.

ABOUT DSB

DSB carries some 168 million passengers every year and operates approx. 80% of passenger train services in Denmark. DSB provides rail services within Denmark and across international borders.

THE CHALLENGE

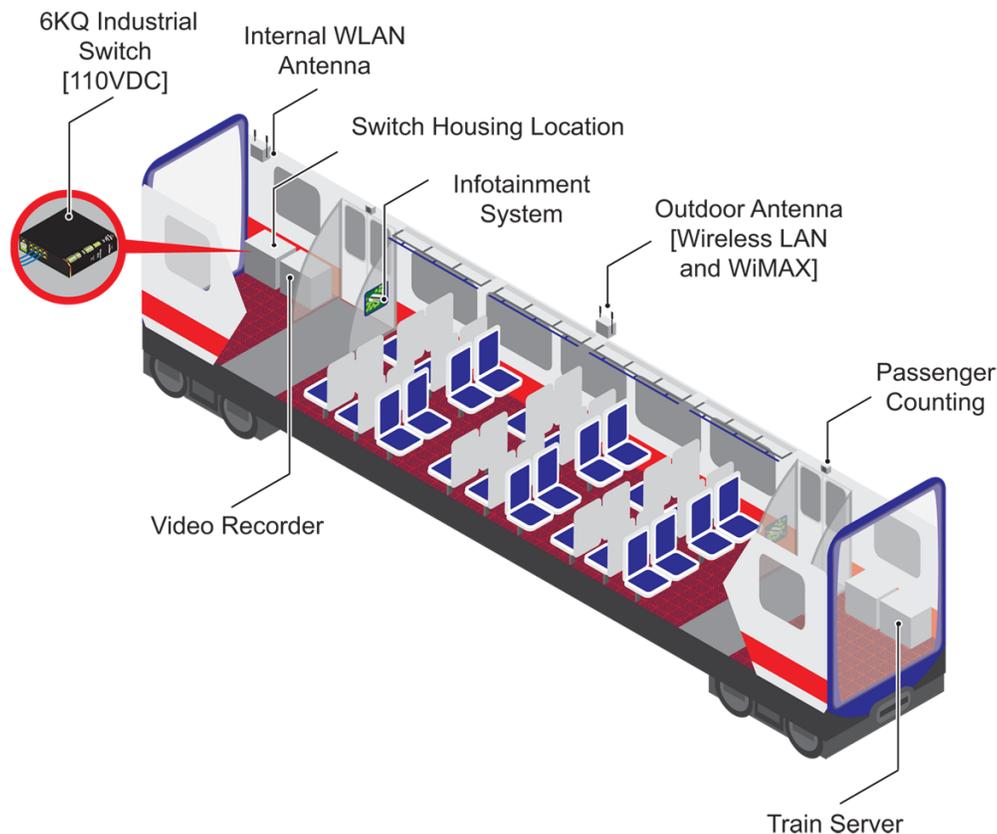
DSB decided that it was important for them to provide network connections for in-carriage IP-enabled security and surveillance equipment, infotainment systems, and passenger counting technology. However, they wanted to

ensure everything installed complied with EN50155. EN50155 even prohibits the use of fans in train electronics: only passive cooling technologies are permitted. Also as a precautionary measure EN50155 suggests the use of protective coatings for PCBs in electronic products to counteract corrosive atmospheres that are often present in railroad applications.

The products to be installed all needed to be powered from an auxiliary 110V DC system which is present in each coach.

THE SOLUTION

The 6KQ met DSB's need for a compact, cost-effective 10-port Ethernet switch, with Gigabit bandwidth, in a hardened package with the assurance of EN50155 certification for railway applications. A 6KQ switch is mounted in each carriage, connected using a bus topology, providing an Ethernet backbone along the length of the train into which the IP-enabled equipment can be readily connected. The backbone is also connected to gateway, responsible for handling the network traffic between the train and the outside world. Network packages can be transmitted and received via an antenna installed on the roof of the carriage.



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THE RESULTS

DSB now have an IP network on board their trains which has enabled a whole host of services to run across the one single communications platform. Train information such as passenger counting via cameras, and the trains current position is sent to a central office for monitoring and statistics. Video recorders are also connected to the network, which help DSB to avoid vandalism and graffiti damage at train equipment. A further benefit of the IP network is providing a free internet connection to passengers.

ABOUT GARRETTCOM

GarrettCom is a leading designer and manufacturer of networking products for industrial and outdoor markets such as surveillance & security, power utilities, transportation, and factory automation. GarrettCom's focus has been on developing innovative, heavy-duty products that are designed with customer flexibility, security, and reliability needs in mind.

For the Power Over Ethernet (PoE) line, GarrettCom has developed a range of industrial Power-Source PoE products based on the IEEE 802.3af standard specification supporting security products such as IP-cameras & badge readers. To learn more about GarrettCom's range of hardened and innovative video surveillance products, visit www.GarrettCom.com/surveillance_security.htm.



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