

## 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°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

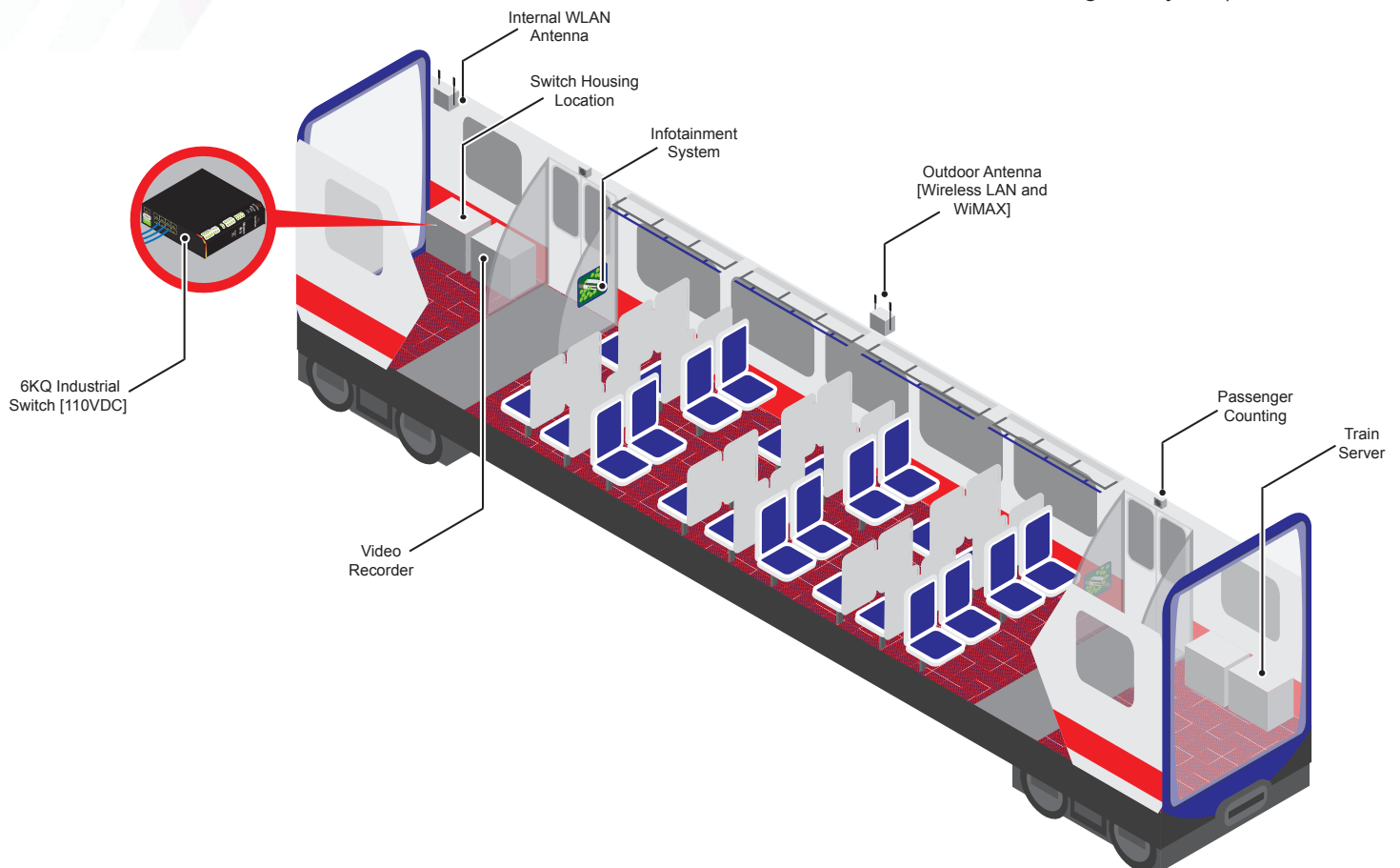
DSB (Danish State Railways), is the largest Danish train operating company, and the largest in Scandinavia. Carrying approximately 170 million passengers every year, DSB is responsible for approximately 80% of the passenger train services in Denmark. DSB provides rail services within Denmark and across international borders. Founded in 1885, DSB is an independent public state-owned corporation under the Danish Ministry of Transport and Energy and employs about 9000 people.

#### THE CHALLENGE

DSB was looking for a way to integrate security, surveillance, passenger counting and infotainment technologies in an in-carriage IP-network solution. DSB also wanted to ensure that the system installed complied with EN50155, including its prohibition on the use of fans. Also, as a precautionary measure EN50155 suggests using protective coatings for PCBs in electronic products to counteract corrosive atmospheres that are often present in railroad applications. The networking system also needed to be powered from an auxiliary 110V DC system, which is present in each coach. DSB turned to GarrettCom and the Magnum 6KQ Managed Ethernet switches to provide the networking solution.

#### 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



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### SOLUTION (CONT.)

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.

The switches are all powered from an auxiliary 110V DC system, installed through each coach. The switches are fully managed using GarrettCom's MNS-6K software, making it simple to realize optimal network traffic for all sub-systems.

The 6KQ is a rugged field switch developed to meet user requirements for small form-factor Gigabit Ethernet switches in demanding applications. It offers a maximum of 12 ports, and can be configured with user-selected combinations of 10Mb, 100Mb and Gigabit fiber ports of any connector type. Copper port options include 10/100/1000 RJ-45, as well as up to eight 10/100 PoE (power over Ethernet) ports. To meet the needs of demanding industrial Ethernet applications, the 6KQ can easily handle stressful workload mixtures of high-burst data traffic and priority streaming traffic.

### THE RESULTS

DSB now has an IP network on board its trains which has enabled a whole host of services to run across a single communications platform. Train information such as passenger counting via cameras, and current train 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](http://www.GarrettCom.com/surveillance_security.htm).



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47823 Westinghouse Drive. • Fremont, CA 94539 • PH: (510) 438-9071 • FAX: (510) 438-9072  
Email: [mktg@garrettcom.com](mailto:mktg@garrettcom.com) • Web: [www.GarrettCom.com](http://www.GarrettCom.com) or [www.GarrettCom.co.uk](http://www.GarrettCom.co.uk)