

# Comprehensive Railway Solutions

## Passenger Information System in Danish Buses and Trains



### ⇒ Project Intro

Nowadays, most of us want to be up to date anytime, using travel times to gain information from public infotainment displays or wireless internet access in public transportation. Commute Media, known as „Gratis Danmark“ in Denmark, has developed a series of passenger information system solutions for buses and trains, including free of charge internet access. They support institutions in public transportation and their system integrators to specify, roll out and operate such solutions. Companies are now able to interact with consumers during their “free” time, when they are open to advertising.

Company: **Commute Media / Gratis Danmark**

Location: **Copenhagen, Denmark**

### System Requirements

- Location-based services and personalised content for specific passengers
- Bandwidth needs to ensure HD quality and live-video
- Broad bandwidth WAN with several WLAN Access Points to enable WLAN-Access and FlashOFDM for cellular internet access over HSDPA or WCDMA through mobile phones
- Product certifications, such as EN50155 conformity, and rugged design suitable for the use in buses and trains

### Moxa Solution

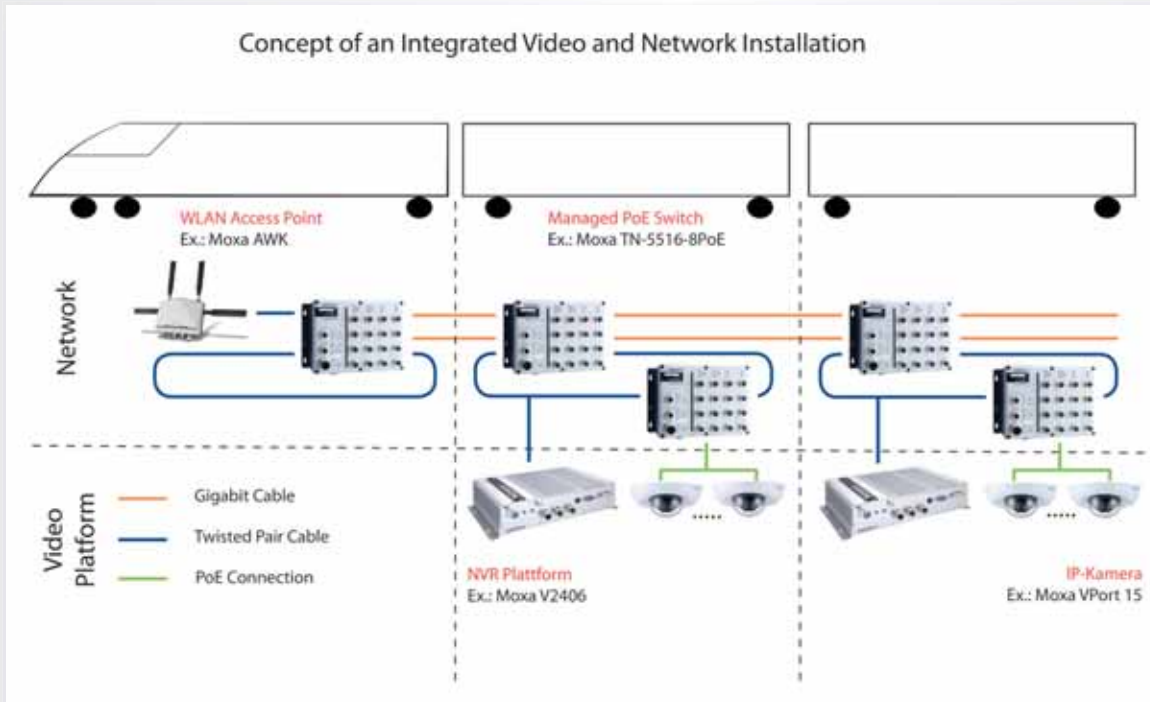
Gratis Danmark’s passenger information system uses a customized version of Moxa’s embedded transportation computer V2402 in all buses and trains in and around Copenhagen, as well as in regional trains in the whole country. They are used to show advertising spots in HD quality on displays inside the trains and buses. The broadband cellular WAN connection also enables live video broadcasting (streaming).

The mobile internet solution is based on wireless gateway platforms that combine a broadband cellular WLAN connection with one or more access points/ clients inside the vehicle. The internet access itself is realized over cellular mobile telephony, usually HSDPA or WCDMA. An additional technology called FlashOFDM is used in Denmark. It offers broadband web access with low latency, which gives users the impression of a conveniently fast connection. Moreover, the Commute Media solution is able to display individualized consumer-related advertisements on a mobile computer or phone.

Moxa’s modular wireless gateway platforms V2420 and V2426 enable so-called location-based services with a combined wireless module for WLAN, mobile telephony and GPS reception. In the case of Commute Media this means that the advertisements shown in buses, trains and on displays at train stations and bus stops can be attuned to specific places and times. So, for example, passengers can be informed right before an upcoming stop, that they need to get off there if they want to visit a newly opened shopping center.

## System Diagram

- Twisted Pair Cable
- PoE Connection
- Gigabit Cable



## Why Moxa?

- The V2400 series' special thermal concept ensures stable operation, which is absolutely necessary for uninterrupted data transmission
- The ready-to-run solution makes installation and programming fast and easy in order to ensure the service offer can be spread across the country quickly
- The V2400 series is designed to allow for significant shock and vibration. This is indispensable for deployment on board trains and lifetime expectations of 10 years or more
- In addition, the CompactFlash and USB sockets provide the V2401/2402 computers with the reliability needed for industrial applications that require data buffering and storage expansion, as needed for video transmission and live streaming

## ➔ Product



### V2400 Series ATOM Based Fanless Embedded Computer

- Intel Atom N270 1.6 GHz processor
- DDR2 SODIMM socket, supporting DDR2 533 up to 2 GB (max.)
- Dual independent displays (VGA, DVI, LVDS)
- 2 Gigabit Ethernet ports
- 4 RS-232/422/485 serial ports, supporting non-standard baudrates
- 8 RS-232 serial ports
- 6 USB 2.0 ports for high speed peripherals
- 4 DIs, 4 DOs
- CompactFlash socket for storage expansion
- Ready-to-run Embedded Linux, Windows CE 6.0, or Windows Embedded Standard 2009 platform

And many more features. For details please refer to [www.moxa.com](http://www.moxa.com)