Ethernet Switches Make Integrated eTicketing System for Trams and Buses More Efficient

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Location / Country : Australia

Product Solutions:
EDS-305/308 Series

5 and 8-port unmanaged Ethernet switches

Introduction

Project Introduction

A major metropolitan area in Australia recently implemented a plan to integrate the ticketing system for their public transportation. The ultimate goal of the project was to provide commuters with a single swipe card that can be used to gain entrance to both trams and buses. Because of the great increase in convenience, the response from commuters to the new system has been overwhelmingly positive.

Integrated IC swipe cards that work on more than one transportation system are all the rage in cities around the world. The system described in this story is unique in that GPS technology is used to help record a passenger's entry and exit locations for more accurate fares. This type of e-ticketing system allows commuters to use only one card for multiple transportation services, and provides an effi cient way for commuters to add money to the cards. It also helps transportation companies to move much of their ticketing bureaucracy to third parties that service all companies involved.

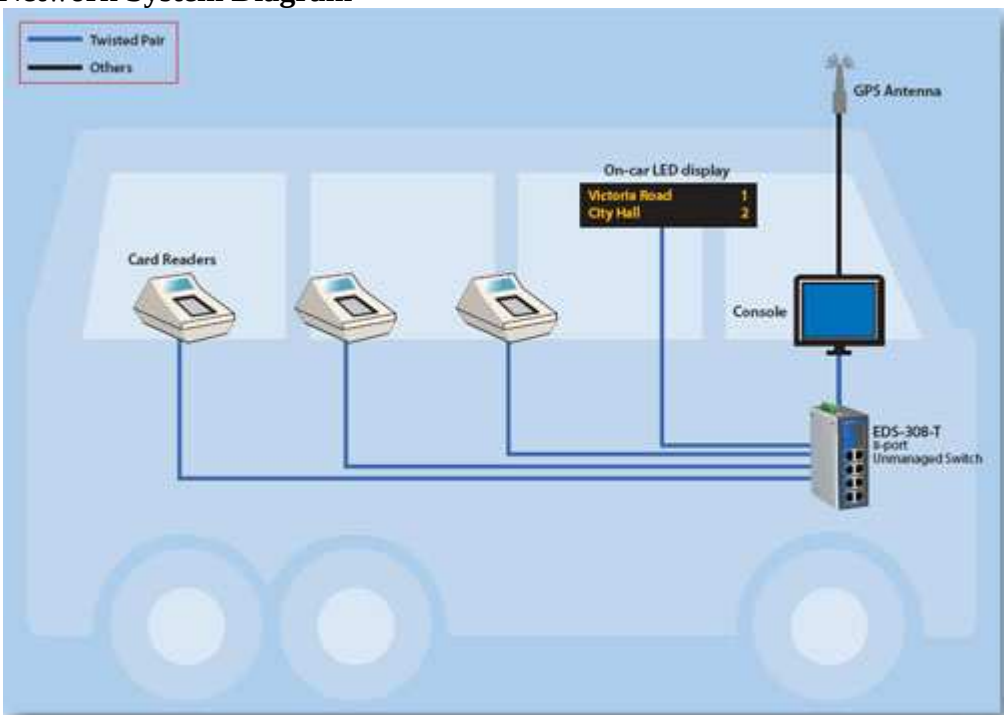
Moxa Solution

The project involved installing ticketing equipment in 480 trams and 2010 buses to create an integrated e-ticketing system. In order to record the distance a passenger travels, the e-ticketing system used GPS to determine the precise location at which a passenger gets on and off a tram or a bus, and smart swipe card readers installed at every door of both trams and buses were used to notify the system when the passenger enters or exits a bus or tram. Each tram is installed with eight to sixteen card readers, and each bus has four to six card readers installed, depending on the total length or type of the cars. The location information of all passengers is collected and transmitted to the embedded PCs that are built into the driver consoles for fare counting and recording. Each tram has both a primary and a backup driver console, whereas only one console is installed on each bus. The driver consoles use GPRS/WLAN to communicate with each stop to show the information on the on-car LED display when approaching the stop, as well as transmit data to a remote server in the control center when the trams/buses return to the terminal. All of the equipment on the trams and buses is connected by one Ethernet backbone formed by Moxa's EDS-308-T switches.

The EDS-308-T is an 8-port Ethernet switch rated to operate in temperatures ranging from -40 to 75°C, which is more than suffi cient for the harsh environmental conditions on the trams and buses. The 8-port EDS-308-T allows the driver consoles and the card readers to

communicate with each other. When passengers swipe their cards after entering a tram or a bus, the card reader transmits the identifi cation number of the card and the current location to the driver console. The fare is subtracted from the value stored on the smart card when the passenger swipes the card again before exiting. The EDS-308-T switches play a key role in the integration and automation of the ticketing system, and make it possible to provide smooth, round-the-clock operation of the transportation system.

Network System Diagram



Why Moxa

- Rugged construction ensures reliable operation in high-vibration, wide-temperature environments on moving vehicles.
- The no fan design ensures a longer MTBF (meantime between failures) to minimize the maintenance required.
- The removable terminal block makes it unnecessary to re-wire when changing the relay output confi guration.
- The -40 to 75°C wide temperature range makes the switch suitable for both hot and cold environments.
- All Moxa switches come with a solid, 5-year warranty,
  and are designed to provide reliable, long-term operation in industrial applications.