

WHITE PAPER  
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## Goodmill w24e-T for Road Transportation Applications

Providing Reliable Broadband Connection for  
Road Transportation Vehicles

Goodmill Systems Ltd. is a trailblazer in mobile broadband connectivity. We ensure constant data flow in demanding conditions where 24/7 connectivity is critical.

To provide reliable data connections for all road transportation applications and to improve passenger safety and satisfaction, we created the Goodmill w24e-T multi-channel router solution. This new technology ensures a reliable and secure wireless broadband connection between the vehicle and the garage/terminal. This helps transportation companies make their fleet management, security, and surveillance more effective. Additionally, it enables them to introduce new services such as e-ticketing, passenger WiFi, location-based advertising and Infotainment.

**“RELIABLE, fast, and secure broadband connection between the vehicle and the terminal”**

### Overcoming the data traffic challenges in road transportation

For buses, cabs, and other road transportation applications, it is essential that the data connections can always be trusted. This has unfortunately been impossible to achieve because of difficult terrain and slow switching between networks. And since large coverage is mandatory for many of these applications, expansion and maintenance have been expensive and time-consuming.

Additionally, critical traffic and passenger traffic need to be separated from each other to ensure safety on-board and passenger satisfaction. Furthermore, a large installed base requires a reliable and automated management system. Trying to accomplish all this efficiently and without high costs has been very difficult. However, now Goodmill Systems Ltd. has come up with a ground-breaking solution to these problems.

### Reliable and cost-efficient broadband connectivity for road transportation

The Goodmill w24e-T mobile multi-channel router is designed for road transportation applications that require critical connectivity at all times. It provides a reliable, fast, and secure broadband connection for communications inside the vehicle and between the vehicle and the garage/terminal. The solution consists of Goodmill w24e-T router(s) and the Goodmill Network Manager, an advanced network management system.

### Numerous practical applications

Goodmill w24e-T gives you the means to provide reliable data connections for moving vehicles – with extremely wide coverage. This improves efficiency and safety, and makes it possible to offer new real-time services to passengers. Goodmill w24e-T brings many practical uses:

- Optimize the usage of your fleets with advanced fleet management
- Improve customer service with real-time e-ticketing
- Make the information systems more efficient with reliable location tracking
- Decrease maintenance costs with vehicle diagnostics and condition-based maintenance



- Increase passenger safety and security with remote monitoring
- Enable passenger counting at passenger boarding and alighting points
- Promote your own services and special offers to passengers using an on-board Web portal
- Enable passengers to use reliable internet for work, studying or fun

### Best possible coverage by using several commercial wireless networks

Goodmill w24e-T creates the desired reliability by combining several relatively reliable commercial networks into one highly reliable broadband solution. It constantly monitors all WAN links and automatically selects the one with the highest priority based on a user-specified priority list. When a WAN link becomes unavailable, Goodmill w24e-T automatically diverts all traffic to the network with the second highest priority.

When the higher priority network becomes available, traffic is switched back if the switching criteria are met. Among the criteria, there is an adjustable timeout period to determine whether the network works properly. The use of different technologies and networks is hidden from the users, and the device seamlessly switches the connections between the WAN links.

### Wide variety of technologies supported

By using a combination of commercial 3G and CDMA450 networks, a vehicle can be connected to a network in an extremely large area. If needed, the coverage can be complemented with any available point-to-point radio technology, such as a satellite link.

Goodmill w24e-T can support many different radio technologies in parallel. Basically any radio terminal that has an Fast Ethernet, USB or ExpressCard interface can be connected to the device. For example, it can be equipped with a 3G HSPA modem and CDMA450 modem for longer distance communication and WiFi as an uplink in a garage or terminal where large amounts of data can be transferred to vehicles.

The WiFi access point of Goodmill w24e-T can provide wireless LAN for passengers or personnel inside the vehicle. Furthermore, satellite, WiMAX, Flash OFDM or any other technology terminal can be used as a WAN connection depending on which networks are available and which offer the desired data capabilities with reasonable costs.

### Extremely secure data traffic

Security must be guaranteed when the connections are built over the public networks. Goodmill w24e-T supports VPN tunneling in all WAN ports. Thus, critical data traffic is always protected when using public networks. VPN tunnels can be created using dynamic IP addresses, so that the address is not part of the VPN tunnel negotiations. Therefore, the possible IP address changes on the used WAN links can be hidden from the LAN side. Additionally, all WAN links have separately configurable firewalls. Device- and link-specific rules can also be defined. It is easy to manage these rules with Goodmill Network Manager.

### Many benefits at the organizational level

Goodmill w24e-T brings a vast array of benefits for road transportation organizations by enabling true broadband data connectivity with extremely wide coverage. Costs are saved, because the device is capable of utilizing existing networks. Instead of building dedicated networks for large coverage, they are only needed in areas where there are none or where the data rate or quality is poor. This makes Goodmill w24e-T a very cost-efficient and environmentally-friendly solution. Solution is future proof since it is possible to add new radio terminals when new technologies are mature enough to be taken into use.

Furthermore, more efficient fleet management, security, and surveillance as well as new services like passenger WiFi, e-ticketing, and Infotainment increase safety on board and passenger satisfaction. This in turn ensures that more and more customers are interested in the services offered by the road transportation companies.

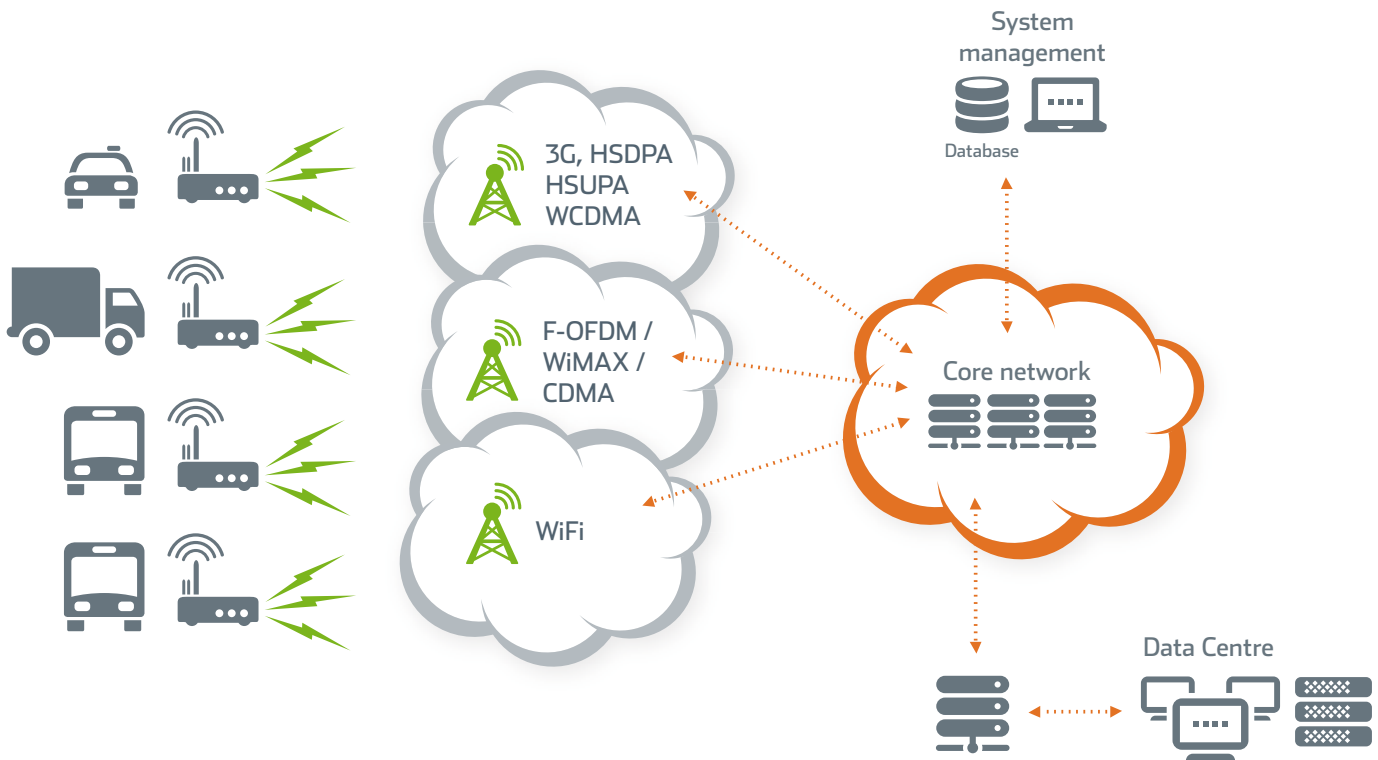
### Field-proven all over the world

Goodmill w24e-T has been proven extremely useful on buses and cabs, and in other road transport applications. Goodmill router solutions are successfully used globally to make sure that critical connections are always available.

### Goodmill Systems Ltd. – changing the paradigm of broadband connectivity

Goodmill Systems Ltd. introduces this revolutionary router solution that enables outstanding broadband connectivity at an affordable price. Our extensive technological experience together with thorough knowledge of road transportation organizations' needs has enabled us to create this ground-breaking technology that will revolutionize connection reliability.

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