



You can take it with you

Vehicle-area networks are allowing road warriors to accomplish more than ever before

By Larry LeBlanc

There are two basic models for extending the corporate LAN to remote locations: the branch office and the so-called “road warrior.” The latter model consists of a single user equipped with a laptop and some means of connecting to the corporate network. Historically that connection was made via a dialup modem; today it typically is accomplished using a Wi-Fi or cellular modem in concert

with VPN software to securely traverse the Internet.

The road-warrior model traditionally has been used to connect mobile workers who spend their time in and around vehicles. However in today’s world the user’s laptop often is just one of several

devices in the vehicle. Consider, for example, some of the contents of the modern ambulance:

- A mobile data terminal (MDT) for dispatch functionality
- A tablet PC for patient-care records
- An EKG device for transmission of cardiac information
- Cameras for remote diagnostic consultation
- Driver safety systems
- A maintenance/diagnostic system
- GPS for AVL/CAD

All of these elements need to access the corporate IT network, and treating them all as individual road warriors is costly and difficult to manage. Some companies perpetuate this model by attempting to network everything through a laptop, but this approach is flawed for several reasons, most importantly the fact that when the laptop leaves the vehicle, this strands the rest of the vehicle's assets. Consequently, the modern work vehicle truly is a mobile branch office and requires a dedicated, secure and managed WAN link to the corporate Intranet. It also needs an on-board LAN environment for devices to collaborate and share the managed WAN resource. This environment is known as the vehicle-area network, or VAN.

While today's vehicle environment is very much a mobile branch office, the mobile environment is much different than a traditional office environment. This creates a host of new challenges, including the following:

Aphalanx of vehicles. A company IT department may be responsible only for a handful of fixed branch

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offices but easily can have hundreds or thousands of VANs to manage.

Remote management. Vehicles move, sometimes hundreds of miles away from the corporate IT department, but users and their devices still will require support, software will need periodic upgrades, and successful data transmission will need to be assured. Remote management is the key.

Switching. The VAN must be able to automatically sense and select the best available WAN connection without user intervention.

Devices and applications. More and more devices and applications — wired and wireless — are being deployed in vehicles, and a mixture of legacy and new applications will require connectivity.

Networks. Organizations often rely on a mix of networks to support their VANs — including private radio networks that provide limited bandwidth, cellular networks that provide higher bandwidth but are more expensive, and private networks — depending on coverage, performance and cost. This makes network management more complex.

Security. Ensuring that all applications and devices used by mobile workers are properly secured, while also allowing quick and simple access to the applications workers need, is a must.

Location. Because VANs are moving, it's critical for operations staff to know where they are.

Cost. Because the VAN is not necessarily under the control of the IT department, the costs associated with using that network also can be out of control. Most organizations will have some traffic going over a commercial network and the wireless carriers are abandoning "all you can eat" plans in favor of metered billing. So, knowing how much data is being used across the fleet will be critical if you hope to manage the overall cost of communications.

Mobile work forces typically have deployed piecemeal solutions, adding radios in various form factors

as new applications are deployed in the vehicle. This approach is expensive and difficult to manage. Plug-in radio cards for laptops are prone to damage or loss, while embedded radios are expensive or impossible to upgrade; thus they become obsolete quickly. Ruggedized modems are more robust, but typically are locked to a single carrier and/or technology. Consequently, they also become obsolete very quickly.

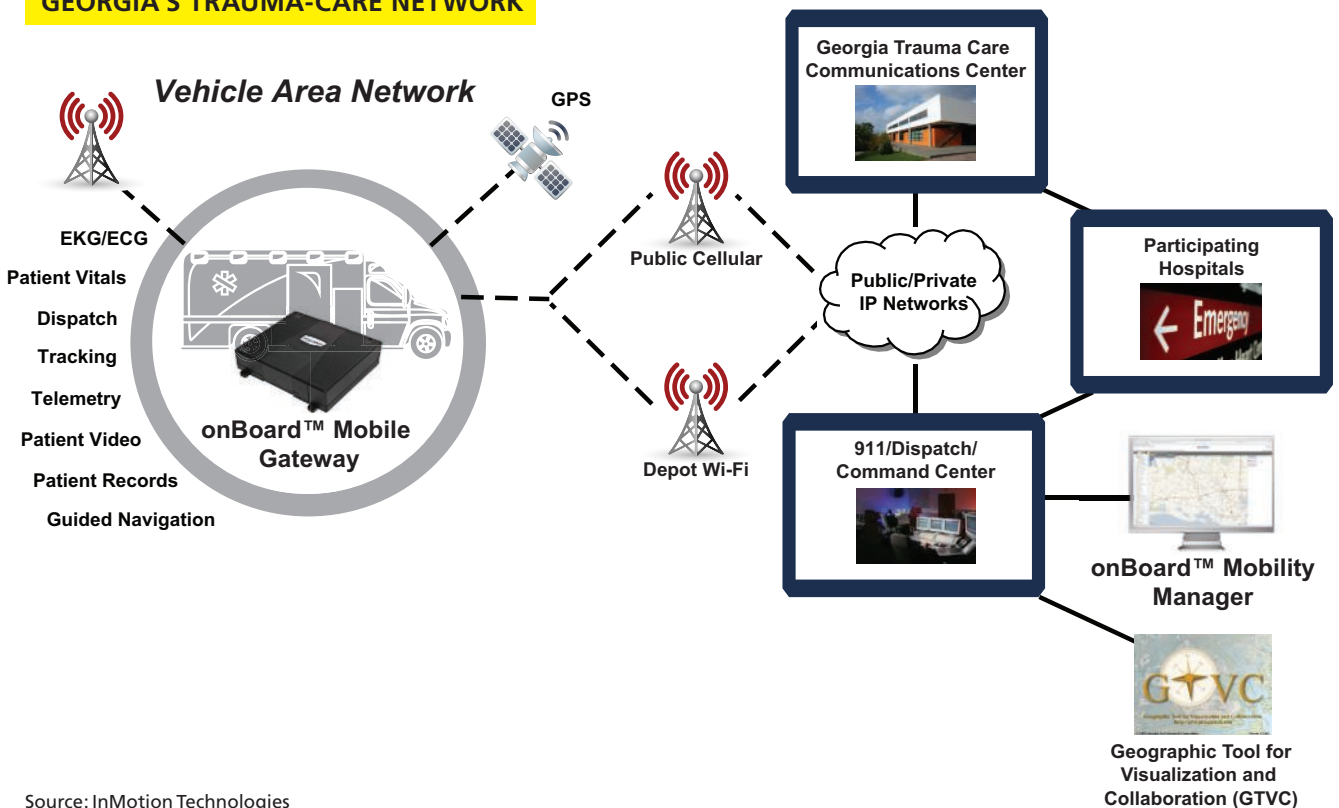
In addition, both options usually require deployment of an overlay VPN tunnel for every device that connects back to headquarters. But by switching to a vehicle-area network approach, companies can deploy a network architecture that will support their increasingly complex IT environment.

The Georgia Trauma Care Network Commission (GTCNC), the Georgia Emergency Management Agency/Homeland Security, and the Georgia Tech Research Institute (GTRI) are developing a statewide automatic vehicle location system in order to display ambulance positions. Armed with real-time EMS vehicle position information, a trauma communications center operator can make the best recommendation to field EMS medics concerning the closest appropriate facility

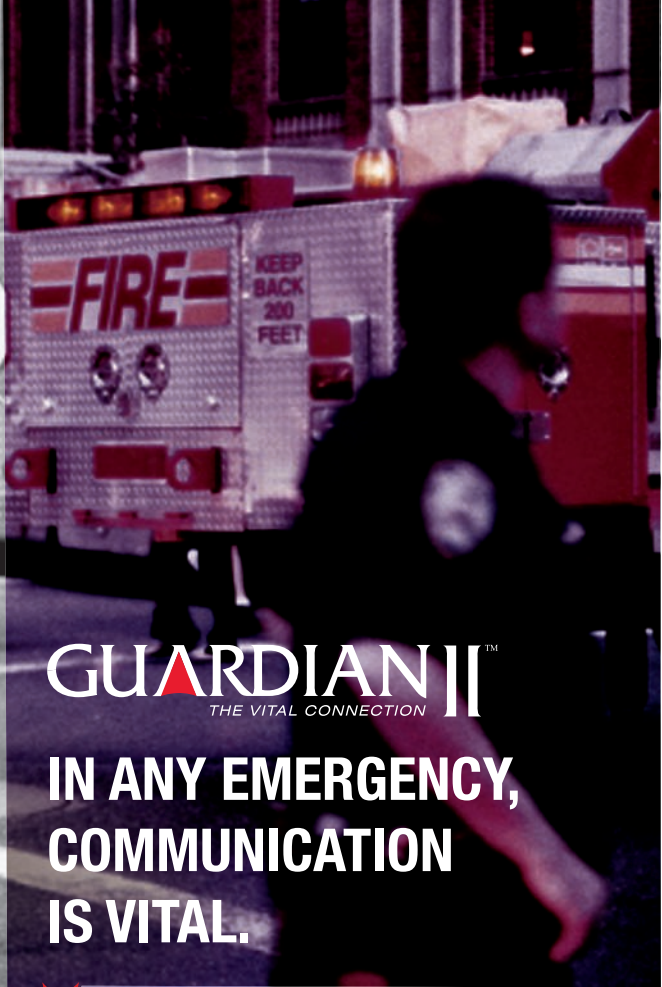
to transport seriously ill or injured patients. This AVL system will have additional utility in response to mass casualty incidents and will be an integral asset to Georgia emergency management. Almost 100 EMS agencies in the state are deploying VANs in ambulances. Each agency has its own unique devices and applications, and all require security and management. All are using different carrier networks, and some will need multiple networks to achieve adequate coverage.

GTRI, on behalf of GTCNC, sought a solution that would enable them to satisfy the requirements of the developing Georgia trauma system, while at the same time provide individual EMS agencies participating in the program with additional capabilities to improve operations and the management of their fleet. (See below.)

GEORGIA'S TRAUMA-CARE NETWORK



Source: InMotion Technologies



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