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# Carroll County secures real-time communications with GPSLock box and FirstNet

By Richard Tackett

With the responsibility of moving more than 24,000 students each day in Maryland, safe and reliable communication is of paramount concern to transportation officials at Carroll County Public Schools. This year, despite COVID-19, the district's transportation department began a major initiative to upgrade its communications system – which previously relied on drivers using traditional consumer cell phones. “The system we were using previously was just not effective – in the case of an emergency, a driver would need to

pull over to answer a cell call,” said Anita Stubenrauch, supervisor of operational performance at Carroll County Public Schools. “It delayed emergency management and weather-response, and really presented a problem if we needed to locate a child. The lack of real-time vehicle location and driver communications really frustrated our operations.”

Carroll County's 311 contractor-operated buses constituted a network of drivers and cell phones, but without any interconnectivity, built-in device safety features, or real-time tracking capabilities. Communication and GPS were critical elements of the district's transportation departmental improvement plan for years – and approved by the school board-appointed security council. Stubenrauch and transportation department staff spent a lot of time researching and testing various solutions.

“We conducted a pretty exhaustive search and testing process for technology which would solve our GPS and communication issues, allowing us to safely provide more effective transportation for our students,” said Michael Hardesty, director of transportation for Carroll County Public Schools.

## A novel solution for multiple problems

Ultimately, the district entered into an agreement with a diverse set of product and service providers – GPSLockbox, BusPatrol, AT&T's FirstNet, Transfinder, and Zonar systems – to solve these myriad issues at no projected cost to the school district.

In June 2020, Hardesty said that Carroll County Public Schools officially entered a five-year agreement with BusPatrol to install external stop-arm cameras on the district's entire fleet. In coordination with the local sheriff's department, ticket revenue generated by stop-arm violations will not only pay for the BusPatrol system – but also for the entire fleet to be outfitted with GPSLockbox PTT mounting kits; FirstNet mobile devices and communication capabilities; Zonar tracking and location services; and Transfinder student-tracking, route-mapping, and parent-facing apps.

“It is my understanding that this is the first deployment of its kind in America, where all of the safety technology fully pays for itself,” Hardesty said. “It came together at the perfect time for us, with the pandemic already putting a stress on our communication network.” The deployment is the first of its kind now available in eight states.

## Safe and reliable onboard communication

GPSLockbox and FirstNet outfitted Carroll County's 311 buses with AT&T Enhanced Push-to-Talk (ePTT), allowing for secure, real-time group communication over the nationwide 4G network, as well as Sonim XP5s ruggedized feature phones for contractors and Sonim XP8 ruggedized Android phones for transportation supervisors.

The Sonim XP5s, for onboard use, were installed on mounting kits provided by GPSLockbox. The GPSLockbox system secures the Sonim device, allowing for convenient locking and unlocking and hands-free operation. The mounting system's built-in amplifier and speaker allows for cleaner communications than a cell phone, and the attached palm microphone is ergonomically very similar to a traditional driver's mic. The kit's NAC-approved power system wires the device directly into the vehicle's fuse box. To see how the system works, visit <https://youtu.be/sqa-OMN0wVY>.

“It is the industry's only mounting hardware optimized for Push-to-Talk which also includes a 20-watt amplifier and speaker; and individual volume control so that a driver can easily increase or reduce the device's volume without taking their eyes off the road, searching for the side buttons on a phone,” said Dan Starr, GPSLockbox vice president of sales and marketing.

Stubenrauch said that the powerful speaker system is critical for pupil transportation due to the noisy onboard environment. From an operational perspective, she said that the entire mounting system is a massive upgrade for the district's emergency management processes.

“Many times, drivers cannot even hear a regular cell phone ringing because of onboard noise,” she said. “Whereas we previously needed drivers to pull over and answer a phone call, they have a microphone within reach and can use it while remaining in compliance with Maryland law.”

If drivers encounter an emergency while driving, they can pick up the microphone and automatically and simultaneously connect to the district's transportation office and their contractor employer. PTT allows for one-to-one and one-to-many communications, which is critical for dispatchers who must quickly communicate directives during emergency situations.

“It operates very much like traditional school bus radio microphone, but it works on the FirstNet nationwide cellular system as opposed to a traditional local radio tower,” Starr added.

FirstNet, built with AT&T, is a communications platform dedicated to public safety – purpose-built for first responders and safety-driven industries like pupil transportation. 📞







"The FirstNet public safety broadband network ensures that Carroll County Public Schools officials can reliably and clearly communicate to the district's network of contracted drivers – with priority and pre-emption if the commercial network becomes congested," said Brandon Gallion, associate director, product marketing, FirstNet Program at AT&T. "Where is the bus? Can you communicate with the driver? These are critical questions during an emergency, and a priority network helps ensure student safety."

Starr said that, in addition to Carroll County using Sonim mobile devices mounted in GPSLockbox kits, many other districts around the nation are beginning to mount Samsung tablets as well – citing the tablets' ability to power RFID identification cards for

students, or to host routing information. GPSLockbox can turn the Samsung Tablet into a crystal-clear nationwide push-to-talk system by adding the palm microphone, 20 watt amplified speaker and convenient on/off volume controls. Now adding tablets no longer require a separate radio or smartphone. One data plan gives you both data and voice communications!

"One of the most common problems for school bus operators is driver substitution and turnover, where one driver is absent and so another driver has to assume a route with which they are unfamiliar," he said. "In that situation, students using identification cards, or that driver having route info easily available, can go a long way toward ensuring reliable drop-offs."

### Safety tech deployment

Today, nearly all of the fleet has been outfitted with the full suite of technology because of the agreement. Carroll County Public Schools is still conducting installations in cooperation with its technology partners, and still must complete final quality-control checks before the fleet is fully operational.

"Our district is having a lot of success with the communication technology on a day-to-day basis," Stubenrauch said. "There are still some technical issues associated with installation, but those will be resolved."

The district has yet to encounter a fleet-wide emergency since installing the system but has successfully tested the group-wide dispatch system. Stubenrauch said that emergency preparedness is top-of-mind after a tornado tore through the area in Spring 2019 and officials were unable to communicate with a bus.

"The system has created such an improvement in our office," she added. "It's almost as if the overall stress level has dropped – because we know we can get in touch with a bus, and that driver will respond to us."

Hardesty emphasized that the installation has been gradual but effective. BusPatrol has been customizing installations for each of the three major makes of buses in Carroll County's fleet. FirstNet and GPSLockbox deployments also present brand new technology for Carroll County's team of dispatchers, requiring some retraining. Carroll County Public Schools administrative staff also visited each contractor's location and provided training to those dispatch and drivers.

"We are still learning the system," Hardesty said. "But I believe that we will be ready to roll when the system is fully operational."

"I feel much more comfortable knowing where all of our buses are and knowing we can reach them instantly in an emergency," he added. "From an operational standpoint, we are very pleased about the district today compared to five years ago – and at all the hard work it took to get here."

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