A CASE STUDY IN TRANSPORTATION

GROUNDBREAKING WIRELESS PROJECT TRANSPORTS HART TRANSIT FLEET INTO THE FUTURE

OBJECTIVE

The Hillsborough Area Regional Transit Authority (HART) provides all of the public transportation needs for Hillsborough County, Florida including the metropolitan Tampa area, supporting a total ridership of nearly 15 million people. As part of an effort to transition away from magnetic strip fare media and towards new, tap-and-go smart cards payments, the organization set out to build a mobile wireless infrastructure that could support 187 buses which travel approximately one million miles per year throughout a 1,000 square mile transit service area.

As the project began to take shape, it became clear to HART that a wireless infrastructure such as the one it was envisioning would need to support a host of other beneficial services including bus location, diagnostics, Wi-Fi and other applications. Success, it concluded, would be largely determined by choosing the right designs and partner.

CHALLENGE

Upon being selected, United Data Technologies (UDT) began working together with HART to identify key project requirements and challenges. Among these, was the fact that the authority's fleet was comprised of vehicles of different makes, models and years, all of which would need to successfully accommodate a variety of hardware including routers, access points, and cabling.

"We're trying to be a different type of transit agency, and being able to provide these types of cutting edge services to our patrons was an important part of our vision. This project was step one," said HART CFO Jeff Seward.

Noting that a project of such a scale and dimension had never been successfully implemented, UDT assembled a staff of wireless, network, software, systems and storage engineers well as virtualization specialists, among others to work closely on the HART project.

"It had never been done successfully anywhere. Other areas had tried but for whatever reasons, the projects had failed," said UDT's VP of Sales and Professional Services Justin Jimenez of other documented cases that had previously set out to provide similar levels of wireless connectivity to public transportation.

In addition to the engineering challenges involved in ensuring mobile connectivity and services across a wide geographic area, significant implementation and logistical obstacles would need to be overcome, not the least of which was the space required to receive, configure and store so much equipment.

"We had a lot of whiteboard sessions and meetings with experienced engineers and personnel on both sides collaborating and innovating over the course of several weeks," said Jimenez.

As the different applications to be supported came into focus, it became clear that first step was to successfully deploy a system capable of simultaneously providing a large number of HART patrons with robust Wi-Fi services which they could use onboard each vehicle to surf the web, check email, watch videos, as if they were stationary or at home. Reaching that milestone would establish a solid foundation on which to satisfy all of the other requirements.

SOLUTION

To achieve HART's vision to provide wireless services to its patrons, UDT configured and deployed Cisco's connected transit solution including its Mobility Router Solutions, OpenDNS, and Prime Management Software. This specially designed hardware required certain modifications and each bus required significant data cabling all of which was ultimately adapted to various different configurations and vehicle types.

For connectivity, the team chose Verizon's LTE services, capable of delivering high-speed wireless and nationwide coverage.

Thanks to UDT's configuration center in nearby Orlando, Florida, the company was able to assist HART by providing a specialized facility that was able to receive, categorize, configure, store and deliver hundreds of unique pieces of equipment for a multi-phased installation – which would have otherwise presented a considerable problem for HART.

Once the team installed the equipment, UDT conducted field tests to ensure the buses would maintain cell coverage throughout the county.

From start to finish the project took just short of 12 months.

"If I could report that every project that we undertake is on time and within budget, I would feel like a hero. Normally I can't do that. With this one, it was a great team and collaboration," said Seward.

Benefits

With its ability to support so many applications and serve such a variety needs, the HART mobile infrastructure project delivers a number of benefits to the organization and the broader community.

Mobile Wi-Fi

Where similar installations only support six to eight individuals per bus, UDT's modifications allow for more than 30 individuals to actively connect to the Internet on each bus.

"This is the backbone and infrastructure that we needed to have to be able to move forward with a lot of other new, innovative technologies that we want to deploy on our buses," said Seward.

New Payments Technology

Soon, the district will use the infrastructure to deploy new smart card technology capable of delivering an improved user experience in the form of wireless fare top-up and balance inquiries, in addition to providing key data and transactional benefits to the finance team.

Mobile Disaster Recovery

Due to the robust nature of the communications infrastructure delivered by UDT, HART decided to incorporate the bus fleet into its disaster recovery plans, using the vehicles as a mobile operations base that the organization can use to move key personnel to a safe location while ensuring uninterrupted operations.

"At some point in time, if there's a disaster recovery scenario, we can deploy these buses as mobile command centers for the executive team, dispatch teams, and bus operators," said Anthony Pearson, Program ERP Analyst with HART.

Vehicle Location and Maintenance

The new system also supports more robust and accurate vehicle location systems that HART can use to send a replacement vehicle and roadside support in the event of mechanical failure.

In addition, the new connectivity makes possible the ability to run diagnostic applications capable of monitoring the vehicle health as well delivering analytical data that can be used to identify opportunities for new efficiencies.

All told, from improving patron convenience and productivity, to vehicle maintenance and financial benefits, and providing a new disaster recovery asset, the project is, by all accounts, a major winner for the district.