COMARK

CASE STUDY

Modernizing the Package Delivery Process

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Highlights

- A global logistics firm needed a replacement for a core business tool
- Required a complex, customized, automated tracking and sorting system for packages
- Clients system relies on ruggedized, on-site computers
- Comark built a custom solution using the Comark-9200 mobile computer
- Client is now planning to roll out these systems worldwide.

Overview

A global logistics giant needed Comark's help when the critical technology it relied on was being "end-of-lifed" by vendor that created it. This hardware and software system was the core of the client's business, sorting packages and ensuring they were routed correctly as they came in and left each of its U.S. sorting hubs. Yet, it was outdated and would now no longer be supported by the vendor.

Finding a replacement was not simple, though. Automated package tracking and sorting systems are complex. And, from warehouses to airports, each hub presents a unique, extreme environment for this sensitive equipment.

Fortunately, the Comark team has been developing rugged computer systems since before the edge computing model started and was able to create a solution that exceeded the client's expectations.

Problem

A household name in the package business needed help to replace the outdated computer systems at its U.S. package sorting facility hubs. Their legacy system was out of date, with hardware that was no longer supported by the vendor. The hardware was also no longer able to support modern software requirements. However, the client's automated package tracking and sorting system was complex and required a highly customized replacement solution.

As each of the client's planes land or a truck arrives, thousands of packages are unloaded into sorting hubs. Each package has a barcode that uniquely identifies it and indicates final delivery location. Hand-held and conveyor-mounted barcode readers use this data to send packages to a series of diverters. The diverters route packages, based on size and destination, to specific containers bound for other long-distance planes and trucks, or local delivery vehicles. Employees work across the system as necessary, ensuring the facility remains both efficient and safe.

The client's automated system depends on a series of ruggedized on-site computers to accurately collect, process, report, and direct the packages through the hub. And, because of the nature of the client's business – timely package delivery – this collection of edge computers must maintain high availability and reliability,

regardless of local weather conditions or how many packages go through the hub.

Older industrial automation equipment is at increased risk of failure, especially when it undergoes such robust use and is situated in an environment that is less than ideal for technology. Worse, if failures did occur, replacement components or technicians familiar with this outdated computer system might not be readily available, leading to downtime the client could not afford. Using such old edge computing devices also limited the client's ability to improve its business, unlike newer, more powerful, more connected technologies.

The company came to Comark to solve this challenge and asked us to develop a replacement edge computing system that avoided these risks. But, for continuity and cost reasons, the new computers needed to use the newest versions of the operating system and applications they were already using but that their old computers could no longer support.

The replacement system had to be mounted into the existing sorting infrastructure. The new edge computers also had to connect to existing ancillary technology via Bluetooth used in the hubs, even when they were up to 300 feet away. And, of course, these new edge computing devices had to remain secure and operational even in hubs located in colder climates.

Solution

By combining Comark's electrical, mechanical, and software engineering expertise, we were able to design and build a solution that went well beyond the client's expectations.

Comark-9200 Mobile Computer

Because Comark has been working in the edge computing space since its inception, over the years we've developed an impressive collection of foundation industrial Internet of Things (IIoT) technologies. Some of these devices solved what were, at the time, unusual deployment scenarios and technical requirements while others addressed more common use cases. However, all of them can quickly be tailored to the unique needs of any specific client.

In this case, the Comark team adapted an existing, turn-key product – the Comark-9200 mobile computer – into a customized solution that could be used in the client's package sorting hubs. This ruggedized tablet computer can run Android, Linux, or Microsoft operating systems, which was convenient for a client like this that needed to run the latest Linux operating system.

Behind its twelve-inch touchscreen is an industrial-strength Intel® N2930 1.8GHz Quad Core system on a chip. And, it has up to 256 gigabytes (GB) of solid-state drive (SSD) storage and 8 GB of DDR3L random access memory (RAM). This makes it powerful enough to complete all the calculations required to keep packages flowing where they need to go.

The standard Comark-9200 also has an Ingress Protection (IP) Code 54 rating. The IP54 rating means it has a high level of protection against particles and a fair amount of protection against water. It is housed in an impact-resistant metal enclosure to protect against exposure to the elements and has optional internal heating. These factors make it ideal for use in the client's wide range of sorting hub environments.

The standard Comark-9200 mobile computer can operate between 32°F and +122°F (0°C to +50°C). However, the design team modified this component to include a heater option that extends operating range down to -20°C for cold, U.S. airport locations.

To solve the communication issue, we used a superior Bluetooth® 4.0 connection card and replaced the standard whip-antenna with a small dome antenna on top of the device. These pieces extended the range of the computer's communication capabilities to over 450 feet, well beyond the necessary 300 feet requested. Then, we designed a mounting bracket that mated with their existing mounts, so the computers could drop into existing locations.

To be assured that our products will operate reliably in the most challenging environments we maintain an in-house environmental testing laboratory that is supplemented by outside resources as required. So, once we built a prototype, we tested its resistance to temperature, humidity, vibration, and even electromagnetic interference (EMI). And all our procedures are documented and repeatable because we're an ISO 9001 certified company. Because of this equal attention to detail, Comark has one of the lowest warranty failure rates in the industry.

We presented several prototypes for the client to choose from. The favorite was deployed in a multi-week trial then approved for production. To build the thousands of units requested, we sourced from our international supply chain then performed final configuration, testing, and quality control at our US-based manufacturing facility in Massachusetts. This allowed the client to quickly install the new systems in their U.S. hubs.

Results

The client was impressed with the engineering team's design and how quickly Comark was able to create a solution that met their needs.

The ruggedized edge computing device the Comark team created for the client was initially intended for their U.S. sorting hubs. However, even as the client is installing the module across the U.S., they are now also planning to roll out the new technology internationally.

About Comark

Founded in 1974, Comark is one of the largest independent providers of customized mission-critical edge computing and display solutions in the world. Comark has deployed millions of units for clients in fire and life safety, government, industrial and building automation, logistics, oil and gas, retail, and other industries which require adherence to rigorous safety, security, performance, and reliability standards. That's because every Comark project has "Trust Built In" SM. Learn more at comarkcorp.com.

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Contact us at: insidesales@comarkcorp.com

Or to request a quote, visit: comarkcorp.com/request-a-quote