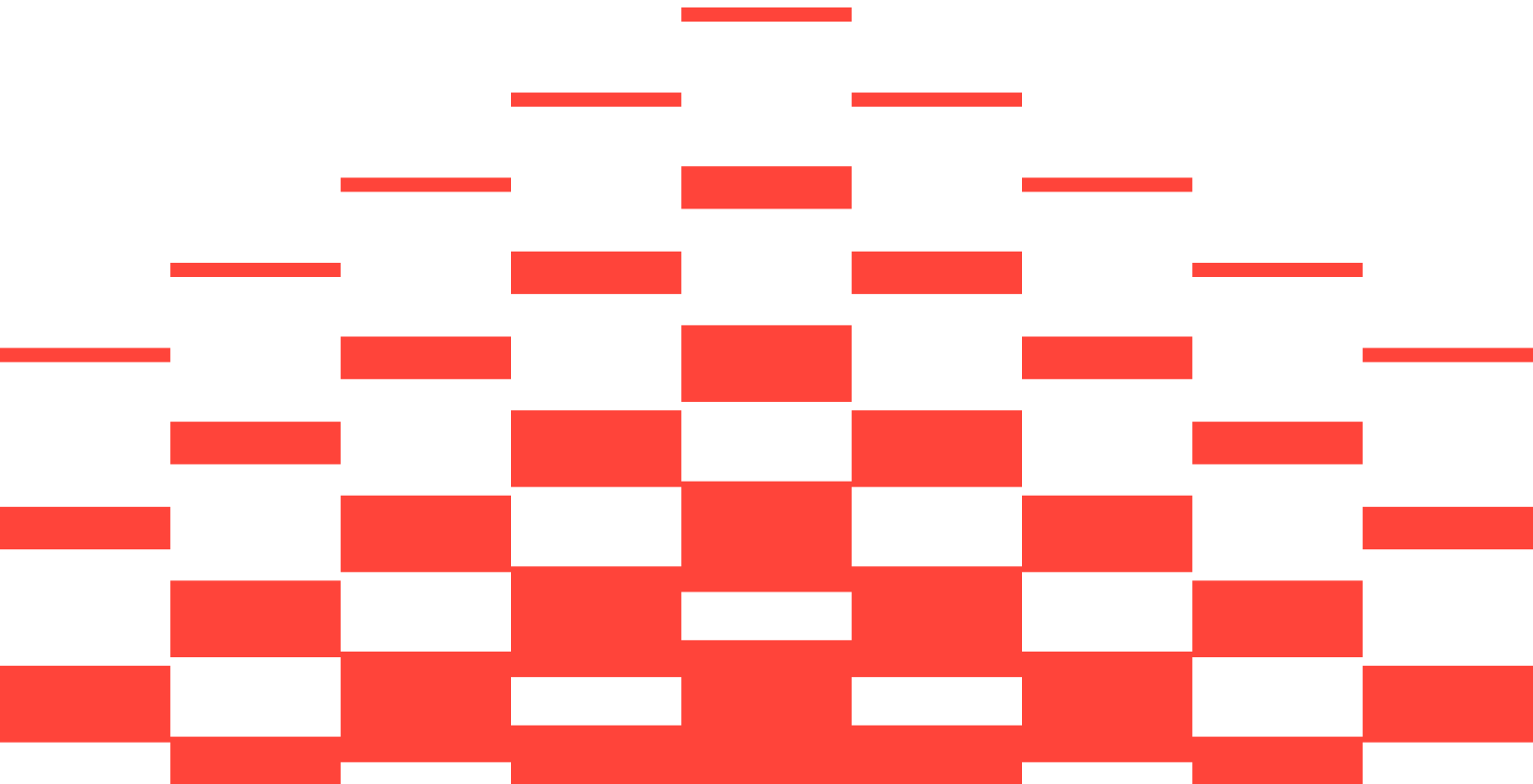
QNX | ZEBRA

Case Study

Zebra Technologies

Powering Performance with Platform Standardization



Customer Background

Zebra Technologies delivers a performance edge to those on the front lines of business globally by connecting people, assets and data. The company's products include specialty printers designed for effortless remote management, easy integration, and unrivaled performance.

The Challenge

Simplifying Operations with a Unified Platform

Zebra Technologies solves problems for businesses across the world, but Zebra had a problem of its own. The company's specialty printers—acquired through mergers and acquisitions—ran on four different product software platforms, all with homegrown operating systems or no OS at all.

When the company needed a new product feature rolled out across its printer portfolio, Salmon's team faced a dilemma.

With many different products in place, each running different software, it became cumbersome to deliver new features to their customers quickly and reliably. In addition their customers' user experience differed depending on the product they were using. In other words, they had to manage and operate each printer differently even when using them to perform similar tasks.

In fact, ready-touse drivers were available, but only if they were using a standard OS on all products. The four top challenges for new feature development included: manpower/ resources, security, understanding customer requirements, and extending legacy embedded technology.

The Solution

Building on a Secure, Real-Time Foundation

The printer group decided it was time to standardize on a common hardware and software platform across its entire portfolio, a decision that set in motion an overhaul that completely changed the way Zebra developed its printers.

The first step the team took was selecting a microprocessor family. To avoid vendor lock-in, the company wanted an architecture that was offered by multiple vendors. They also sought a processor line that would satisfy customers at different price points. An ability to port software easily to get up and running quickly would save development time. After reviewing these hardware criteria and more, the team chose the Arm® processor architecture.

Next, they kicked off an evaluation of a dozen commercial operating systems. The OS would need to be real-time, highly reliable and secure and have a microkernel architecture so that the team could share software components like drivers or file systems at scale, across all printer categories.

Zebra printers deliver mission-critical, on-demand printing day and night and must be always available. Since the OS cannot be a point of failure, real-time capability for reliability was the highest priority for the OS. And because they were adding connectivity and dealing with potentially sensitive data and systems, security was another top priority. In addition, the OS would need to be flexible so Zebra could keep up with the changing connectivity expectations of its customers. A commercial OS typically has a library of board support packages (BSPs) with hardware-specific operations required to get a real-time operating system (RTOS) up and running. Choosing an OS with existing BSPs for Arm and the specific hardware they were using would help them use development time and resources more efficiently.

We wanted an OS vendor with a broad set of BSPs, so we could get our products up and running quickly. What's more, the team's goal of scalability demanded a microkernel OS.

The group selected the QNX® OS as its software foundation for all printers.

Highlights

Business Drivers

- **Faster Innovation:** Quickly add new features and technologies.
- **Platform Stability:** Create a more stable platform.
- **Hardware Flexibility:** Achieve hardware independence.
- **Consistent Experience:** Same features across all products.
- **Speed to Market:** Reduce time to market.

"QNX gives us a competitive advantage and helps us satisfy our customers. Our best engineers were wasted on OS drivers and patches, and now they are focused on bringing added value to applications."

Victor Salmons, Vice President of Engineering, Specialty Printing Group, Zebra Technologies.

The Results

Accelerated Development, Unlocked Innovation

Transitioning to the new hardware and software platform architecture was an investment in the company's future. With ready-made BSPs and the ability to share software at the driver level (unlike monolithic kernels such as Linux) across a family of 50 printers, they can bring up new hardware quickly.

"We've vastly improved our development cycles. What used to take weeks, now we can do in days or hours. By taking advantage of drivers that already exist, we can paste features together easily and our developers can do more."

- Victor Salmons, Vice President of Engineering, Specialty Printing Group, Zebra Technologies.

The engineers now have time to focus on innovative features.

"Cloud, security, IoT protocols—we can develop these much more efficiently because our best engineers are now available for feature development instead of OS maintenance."

- Victor Salmons, Vice President of Engineering, Specialty Printing Group, Zebra Technologies.

Why Choosing QNX Paid Off

The QNX real-time microkernel OS is the power behind Zebra's proprietary software stack called LinkOS, which spawned an ecosystem of apps, software tools, and software development kits (SDKs).

Zebra Technologies now offers more than 50 specialty printers on its QNX-Arm LinkOS platform.

"Now our group releases 4 times more new products with the same amount of staff. We are much more efficient at delivering value."

- Victor Salmons, Vice President of Engineering, Specialty Printing Group, Zebra Technologies.

What's more, the team's goal of scalability demanded a microkernel OS.

About QNX

QNX, a division of BlackBerry Limited, enhances the human experience and amplifies technology-driven industries, providing a trusted foundation for software-defined businesses to thrive. The business leads the way in delivering safe and secure operating systems, hypervisors, middleware, solutions, and development tools, along with support and services delivered by trusted embedded software experts. QNX® technology has been deployed in the world's most critical embedded systems, including more than 275 million vehicles on the road today. QNX® software is trusted across industries including automotive, medical devices, industrial controls, robotics, commercial vehicles, rail, and aerospace and defense. Founded in 1980, QNX is headquartered in Ottawa, Canada.

Learn more at qnx.com →