Microsoft Visual Studio 2005
Customer Solution Case Study

Race Cars, Linux, and Videotape

Overview

Country or Region: Australia
Industry: Digital video design and manufacture

Customer Profile

Headquartered in Sydney, OpiaVision is a leader in developing technology for the security industry. Its unique WaveServe technology is a self-contained video surveillance system for use in a variety of environments.

Business Situation

OpiaVision was running WaveServe on an embedded Red Hat Linux operating system. Linux was proving unreliable, resulting in increased support costs and more system faults.

Solution

OpiaVision migrated the device operating system from Linux to Windows® CE version 5.0, using Microsoft® Visual C++® .NET for coding.

Benefits

- Fewer operating system faults.
- Single, familiar development environment.
- Strong developer support network.
- Improved ability to respond to customer requirements.
- Increased flexibility.

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Clive Swatton, Director, OpiaVision

A leader in digital video recording devices for the security industry, Australian company OpiaVision ran its unique WaveServe products, including a specialized application for use in racing cars, on an embedded Red Hat Linux operating system. The operating system was proving unreliable, and adequate support was hard to come by. The system was causing a high rate of product failures. In late 2005, OpiaVision migrated all its products to Microsoft® Windows® CE 5.0, writing code in Visual C++® .NET, and hasn't looked back. Product faults caused by operating system issues have dropped by 80 percent and the system is more reliable, faster, and more efficient. Its racing car application is now six times faster to start up and has never required an in-car restart during races. In addition, the Windows framework is incredibly price competitive, even compared to Linux. OpiaVision has also found Microsoft's extensive support network incredibly beneficial.

Microsoft Windows Embedded

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Situation

Founded in 1999, OpiaVision is an embedded original equipment manufacturer headquartered in Sydney. With three staff and around eight PCs, it is a leader in the security industry, having developed a revolutionary self-contained system for video surveillance.

OpiaVision quickly made a name for itself with its embedded digital video recorder (DVR) device with an interface to a Windows® operating system application for monitoring. The system was based on a customized digital video compression chip and ran on an embedded Red Hat Linux operating system. In fact, OpiaVision was one of the first DVR manufacturers to develop a fully embedded Linux application.

Because this system was small and had a low power requirement (less than 30 watts consumption), it was able to be applied in a range of situations not suited to traditional surveillance systems, such as in trams, on yachts, and powered by batteries in rubbish dumps.

The WaveServe system converts security camera footage to digital format, then compresses and stores the information on a hard disk inside the device. A single WaveServe unit can support up to 24 cameras, and WaveServe units can be cascaded to present a single virtual unit to the user monitoring the system. The WaveServe application resides on a PC running Windows XP and can extract the compressed digital footage at the user's request.

In 2003, the company was approached to develop an in-car surveillance system for the V8 Supercar series. Different from the in-car cameras used by television networks, this system is designed to monitor driver actions so that, in the event of an accident or incident, officials can decide where fault lies and fine drivers or deduct points if their actions are ruled irresponsible. The system was rolled out to the full field of 35 cars at the end of 2003.

The WaveServe system is entirely located within the car. If a driver is involved in an incident, the surveillance footage is downloaded after the race.

OpiaVision soon realized that the Linux operating system was not all it had hoped for. It was not as reliable as expected and, when combined with running the hardware inside an unstable environment such as a race car, led to systems being regularly returned for fault repairs.

"An application running inside a V8 Supercar needs to be able to deal with a lot of vibration and shock," says David Douglas, a Director of OpiaVision. "We were running the Linux operating system off a hard drive in the car and the system would crash fairly regularly. We would then have to go through a reboot, restart, and disk scan. It would take about 10 minutes before we were recording again. And a lot can happen in 10 minutes on a race track. This level of outage simply wasn't acceptable."

"We weren't just having reliability issues with Linux in the racing cars," adds Clive Swatton, also a Director at OpiaVision. "Our commercial security recording systems were also experiencing problems."

OpiaVision decided it was time to move to a more stable and reliable operating system. The company also wanted an operating system that would be more flexible and easier to write code for.

Solution

In mid-2005, OpiaVision began testing the in-car surveillance systems running on the

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Microsoft® Windows CE version 5.0 operating system—an open, scalable operating system that integrates reliable, real-time capabilities with advanced Windows technologies and allows developers to build a wide range of innovative, small footprint devices.

The success of these trials prompted the company to upgrade all in-car systems to Windows CE at the end of the 2005 season.

For the V8 Supercars, OpiaVision also switched to running the operating system from a chip rather than a hard drive. This made the operation of the device much more reliable.

"When we decided to move from Red Hat Linux, we looked at a couple of different Linux solutions," says Swatton. "However, when Microsoft released Windows CE 5.0, we knew we'd found what we were looking for. It's a far more integrated and embedded development system. This made it a very logical and easy choice for us."

Visual Studio® .NET provided an advanced development environment that allowed OpiaVision's developers to take advantage of their skills through a familiar interface and proven methods that could be used both on the device itself and the PC client software.

The resulting application is believed to be the first Windows CE 5.0–powered DVR solution in the Australian market.

"All our core products are now running on the Windows CE operating system," said Swatton. "It is easier to use than Linux and more reliable. Its rich set of programming tools is ideal for building customized operating systems and components for embedded system devices."

Benefits

More Reliable System Reduces Faults

"Windows CE has helped us create a system that is more reliable, quicker, and more efficient," says Douglas. "It is now far easier for race officials to obtain the footage. The system is also around six times faster to start up, which helps immensely in a time-critical environment."

Since migrating to Windows CE, OpiaVision has received 80 percent fewer system returns for operating system–related faults for all its products, not just those used in the V8 Supercars.

"Thirty to 40 percent of the Linux-based devices had trouble tracking the causes of incidents in race cars," says Swatton. "Windows CE appears to have completely resolved this issue. We have not had any systems returned for this issue since the migration and have not required a single in-car reset during races."

A stronger coding and development framework also means it takes less time to develop and build the device, which saves time and gets products to market faster.

"I've used the Microsoft Visual C++® framework since it was released nearly 15 years ago," says Douglas. "Being able to get back to a Windows operating system after using Linux for development has been great. I really like using it. It's useful and informative."

Competitive Price

After using a Linux operating system, OpiaVision was naturally concerned that migrating to Windows CE would bump up the price of its products due to licensing costs. However, it has found the Windows CE operating system to be an incredibly cost-effective platform.

"One of the big advantages of Windows CE is its price point, especially because our devices don't need a graphical interface, so we don't have to pay for one," says Douglas. "It actually makes it a very cheap operating system. This is very important when you consider that you can install multiple copies of Linux at no charge. However, the competitive price point of Windows CE really negates that argument."

Single Development Environment

Rather than having its video box running on a Linux operating system and its viewing software running on a Windows XP environment, OpiaVision is now reaping the benefits of a single development environment, with everything running on the same platform.

"Using only one operating environment has made life so much easier," says Douglas. "Previously, I needed a Windows development system to develop the viewing software and for general use. I then needed a second system for Linux development. This had to run on a separate PC so, if I ever needed to do remote development work, I had to lug two computers around with me. Now everything I need is on one PC."

Strong Microsoft Support Network

One of the issues OpiaVision had with Linux was the difficulty to find support or guidance when needed. Windows CE has changed all that.

"Since moving to Windows CE, I've discovered just how much support is out there," says Douglas. "Microsoft hosts monthly online chat sessions about the product and these are absolutely invaluable. It's great to be able to get access to the developers, have your questions answered, and receive helpful tips.

"Developer newsgroups are another valuable source of information. There are always a number of people on hand to answer your questions or point you in the right direction. Working with a Microsoft product means you're guaranteed a level of support not available with other operating systems. You don't have to be a propellerhead like you do with Linux."

For More Information

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For more information about OpiaVision products and services, call (612) 9979 4700 or visit the Web site at: www.opiavision.com

Microsoft Visual Studio 2005

Microsoft Visual Studio 2005 is the world's most popular development environment for designing, developing, and testing next-generation Windows-based solutions and Web applications and services. By improving the development experience for Windows, the Web, mobile devices, and Microsoft Office, Visual Studio 2005 helps organizations deliver a variety of solutions more productively than ever before. Visual Studio Team System expands the product line with new software tools that enable greater communication and collaboration throughout the development life cycle. With Visual Studio 2005, businesses can deliver modern service-oriented solutions more efficiently.

For more information about Visual Studio 2005, go to: msdn.microsoft.com/vstudio

Software and Services

- Products
  - Microsoft Visual C++ .NET
  - Microsoft Visual Studio .NET 2003
  - Microsoft Windows CE 5.0
  - Microsoft Windows XP

Hardware

- 2x Dell 8200 servers
- 1x Dell 4000 servers
- 5x Generic P4 PCs

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