

SkyPilot Networks Enables the Unwired Lifestyle with Metro Wi-Fi Solutions

Company Speeds Time-to-Market and Ensures Quality Using Wind River Platform for Network Equipment, VxWorks Edition

As high-speed Internet access becomes a basic amenity, like telephones and televisions, a growing number of U.S. cities are implementing leading-edge Wi-Fi technology to provide public wireless access. Wireless mesh solutions sit on top of light poles in the streets—transforming entire city blocks into public hot spots.

SkyPilot Networks is a leading provider of carrier-class wireless mesh solutions. These solutions enable service providers, municipalities, and public safety agencies to rapidly deploy cost-effective broadband access, voice over Internet Protocol (VoIP), public and private Wi-Fi access, video surveillance, and other wireless applications. SkyPilot has provided Wi-Fi networks for cities across the U.S., including Boston, San Jose, and Portland, as well as in Western Europe, Africa, and the Jamaican Islands.

The synchronous mesh network solution from SkyPilot combines standards-based Wi-Fi access with a high-performance, scalable, and self-healing wireless mesh backhaul network using the following products:

- SkyGateway™ nodes to interface with the Internet
- SkyExtender™ DualBand™ nodes that integrate Wi-Fi access and mesh backhaul
- SkyControl™ and SkyProvision™ software for centralized management

Hunt for RTOS Leads Startup to Wind River

In order to develop its product line, SkyPilot needed a real-time operating system (RTOS). The company required a robust, off-the-shelf device software solution that would enable it to speed time-to-market while ensuring product quality.

“We quickly determined that Linux didn’t have the real-time features to handle the high demands placed on our software,” says Paul Gordon, Vice President of Engineering at SkyPilot. “We needed a reliable operating system with a solid set of development tools. I had worked with Wind River’s VxWorks RTOS at previous companies and had good experiences, so it was the obvious choice.”

“We went from nothing to shipping a product within 12 months, instead of the more typical 15 months—saving us hundreds of thousands of dollars in development costs. This was a significant accomplishment, given the complexity of our products; and it was critical from a business perspective, since we were a startup company at that time.”

— Paul Gordon, Vice President of Engineering,
SkyPilot Networks

Company Profile: SkyPilot Networks

- Provider of carrier-class wireless mesh solutions that enable service providers and municipalities to deploy broadband wireless networks
- Solution uses a patent-pending synchronous mesh architecture with high-speed switched directional antenna arrays that extend reach, mitigate interference, and maximize spectral reuse
- Shipped 25,000+ units to more than 300 customers in 50 countries
- Privately held company based in Santa Clara, CA

Industries

- Networking

Solution

- Wind River Platform for Network Equipment, VxWorks Edition
- Wind River Workbench, On-Chip Debugging Edition

Results

- Fast time-to-market for a scalable, high-performing metro Wi-Fi product line

Wind River Platform for Network Equipment, VxWorks Edition, was the ideal match for SkyPilot's requirements. One key benefit, according to Gordon, was the platform's full set of networking features, such as the latest standard support for IPv4/IPv6, Wi-Fi, security protocols, and device management. The platform also meets current demands for performance, security, and wireless functionality.

Solution Speeds Time-to-Market

SkyPilot began using Platform for Network Equipment in February 2004, and quickly ramped up the design process with VxWorks and a hardware reference design from Atheros Communications.

"We went from nothing to shipping a product within 12 months, instead of the more typical 15 months—saving us hundreds of thousands of dollars in development costs," Gordon says. "This was a significant accomplishment, given the complexity of our products; and it was critical from a business perspective, since we were a startup company at that time."

Since the initial product rollout, SkyPilot has continued to build its intellectual property (IP) using Platform for Network Equipment. Because of these integrated and optimized develop-and-run tools, the company has cut its development time dramatically, delivering at least one more software release each year. "This significantly impacts our bottom line, adding 5 to 10 percent to our annual revenues," says Gordon.

Once products are in the field, SkyPilot continues to rely on the platform to keep customers happy by quickly addressing bugs and adding new management and networking features.

End-to-End Device Software Development Suite

One key reason SkyPilot selected Platform for Network Equipment was because it combined the reliable VxWorks RTOS with a full Eclipse-based tool suite: Wind River Workbench, On-Chip Debugging Edition. Workbench includes visual configuration and analysis tools that help SkyPilot streamline design, development, debugging, test, and management.

An important Workbench highlight, according to Gordon, is its full set of debuggers. Wind River's standards-based on-chip debugging tools help SkyPilot simplify the hardware development process and seamlessly integrate hardware, firmware, and software debugging.

"We have customers in 50 countries," Gordon adds. "With the Workbench debugging tools, we can remotely monitor on a real-time basis and quickly debug in the field. This reduces time spent identifying and fixing problems, which

translates into cost savings. In addition, our ability to immediately address customer needs leads to enhanced customer service and satisfaction."

Enterprise-Wide Standardization

Platform for Network Equipment offers multiple-processor support and OS flexibility, allowing SkyPilot developers to standardize on a single comprehensive development environment and easily migrate from project to project.

"We don't have to think twice about changing hardware platforms," Gordon explains. "VxWorks has the best support of different hardware reference boards and designs. Today, our product line uses three processors—MIPS, PowerPC, and ARM—all running VxWorks."

By standardizing technologies, tools, and processes across the enterprise, Platform for Network Equipment has helped SkyPilot increase productivity and collaboration among its engineering staff worldwide, focus on creating differentiated value for customers, and decrease time-to-market.

Global Support and Customer Education

Platform for Network Equipment is backed by Wind River's 24/7 global support organization. "The support is excellent and is always there when we need it," Gordon says.

Gordon has relied on Wind River staff to help with migration instances. In addition, SkyPilot has used Wind River Customer Education to create VxWorks experts and get individuals and teams up and running quickly.

Successful Results

- Using Platform for Network Equipment, SkyPilot was able to release a full line of products comprising its synchronous mesh network solution.
- The company successfully met its goals to speed time-to-market while ensuring product quality—saving hundreds of thousands of dollars in development costs on its initial product rollout.
- SkyPilot continues to cut development time using VxWorks—delivering at least one more software release annually and adding 5 to 10 percent to the company's bottom line.
- Platform for Network Equipment enables SkyPilot to keep customers satisfied by quickly addressing bugs and adding features.

Learn More



For additional information about the products mentioned in this case study, visit:

www.skypilot.com
www.windriver.com

WIND RIVER

Wind River is the global leader in Device Software Optimization (DSO). We enable companies to develop, run, and manage device software faster, better, at lower cost, and more reliably. www.windriver.com

© 2007 Wind River Systems, Inc. The Wind River logo is a trademark of Wind River Systems, Inc., and Wind River and VxWorks are registered trademarks of Wind River Systems, Inc. Other marks used herein are the property of their respective owners. For more information, see www.windriver.com/company/terms/trademark.html. Rev. 06/2007