

Platform for Consumer Devices, Linux Edition, Automotive Profile

Compare the cabin of an average vehicle 10 years ago with one today—it illustrates the stark reality faced by automotive OEMs. The number of consumer devices invading the cabin presents a compelling challenge. These high-margin items may help sell the car, but the disparity between the vehicle life cycle and the device life cycle is measured in years, not months. Standards-based, open-source software, such as Linux, helps in-vehicle device manufacturers anticipate future requirements and meet design challenges: creating a reusable device platform that increases vehicle margins, accelerating product development, and improving quality to reduce service issues and recalls, all within a flexible architecture.

Wind River Platform for Consumer Devices, Linux Edition, Automotive Profile is a commercial-grade Linux solution fine-tuned for in-vehicle device development and deployment, including infotainment, telematics, navigation, rear-seat entertainment, and external gateway devices. The platform includes a fully tested and validated distribution based on the latest Linux 2.6 kernel technology, the Eclipse-based Wind River Workbench development suite, education services to help jump-start your projects, specialized professional services, and 24/7 global technical support.

The Foundation: Commercial-Grade Linux Technology

The Automotive Profile is specifically designed for device manufacturers and silicon vendors who need specialized Linux capabilities for automotive device projects. At the core of the platform is the kernel.org Linux 2.6 kernel implementation, with integrated patches and packages for enhanced networking and multimedia requirements. The Wind River Linux distribution is optimized for the small footprint requirements of an automotive device, but contains all the essential Linux capabilities for processing diverse multimedia applications and multiple networking interfaces. The platform offers support for such leading specialized automotive device processors as Freescale, Intel, Marvell, and TI. Wind River Real-Time Core for Linux is optionally available to deliver hard real-time determinism in an open-source, GPL-safe implementation.

Based on an open architecture, the Automotive Profile offers a well-maintained API layer to serve as an open specification, assuring easy integration with partner and legacy technologies. Wind River offers a “pristine-source” distribution that ensures maximum visibility, enabling developers to see exactly which patches and packages have been included, as well as easily incorporate new ones as they become

available. The platform’s distribution also provides a unique, intuitive build system that makes it simple to install and modify the kernel and root file system.

All open-source and integrated components of the Automotive Profile, including the kernel, integrated patches and packages, Wind River Workbench, and supported hardware architectures and boards, have been exhaustively tested and validated. In addition to our Linux test harnesses, we have performed extensive use-case validation to ensure the platform is optimized for in-vehicle devices.

Integrated and Validated Run-Time Technologies

Platform for Consumer Devices, Linux Edition, Automotive Profile includes comprehensive run-time technologies. Connectivity options include IPv4/6 and IEEE 1394, so you can use the Wind River platform to integrate disparate devices in the vehicle. Leveraging these standard technologies saves development time and allows you to focus on adding value and differentiating functionality to your device.

The Automotive Profile also adds specific functionality to deliver a robust development platform. The reduced footprint required by in-vehicle devices is enabled by such open-source packages as kernel XIP, squashFS, cramfs, busybox, and uclibc. DirectFB and gtk provide graphics support. A preemptible kernel, O(1) scheduler, fast user-space mutexes, interrupt threads, and high-resolution POSIX timers help drive system performance. Open-source power management packages deliver features that include dynamic frequency and voltage scaling, suspend-to-RAM for the processor and suspend/resume for devices, and dynamic power management for select boards.

Optimized Development Suite

The Automotive Profile includes the industry-leading open, extensible Wind River Workbench development suite. From hardware and board initialization to application development, Workbench offers deep capability across the development process in a single integrated environment, with complete platform integration and powerful tools for debugging, code analysis, and test. Based on the Eclipse framework, Workbench can be extended easily through in-house, third-party, open-source, and commercially available plug-ins. Workbench's support for both Wind River Linux and VxWorks, multiple architectures, and multiple programming languages gives companies unprecedented flexibility to develop in-vehicle and safety and security applications using a common set of tools.

Customer Support

The Automotive Profile is backed by Wind River Support, a Support Center Practices (SCP) certified organization. Our customers have access to Internet-based support 24/7, augmented by the industry's leading online knowledge base. To ensure that your team stays on track, additional support is available via telephone or email. Long-term, extended support can also be arranged to accommodate the entire life cycle of your production model.

Professional Services

A CMMI Level 3 certified organization, Wind River Professional Services offers extensive experience in automotive device systems integration. We apply expertise in graphics, digital media management, power management, and fast boot to provide services tailored to the needs of automotive device development, including subsystem integration, wireless technology integration, and legacy application migration. In addition, our specialized Linux Services Practice has a proven track record of delivering design, integration, and optimization services that successfully apply Wind River technology to automotive solutions.

Extensive Partner Ecosystem

To deliver a complete range of integrated technologies, Wind River has joined forces with world-class silicon and automotive software providers to integrate such technologies as speech recognition, GPS, navigation, and multimedia extensions. Our select partners extend the capabilities of Platform for Consumer Devices, Linux Edition, Automotive Profile. More than just a technology offering, our Services and Support teams understand how partner products come together to deliver a seamless solution for in-vehicle devices.

Flexible Business Options

Wind River complements the technical advantages of the Automotive Profile with flexible options for technology access. You can structure a market risk mitigation model, license only essential technology, or subscribe to technology and services in a traditional business relationship.

Why Platform for Consumer Devices, Linux Edition, Automotive Profile?

- Preintegrated, tested, and validated Linux distribution reduces time-to-revenue
- Pristine-source code transparency and build system offer maximum flexibility to customize distribution
- Complete, end-to-end development suite enables developer efficiencies and standardization
- Small footprint optimizations meet automotive device requirements
- Commercial-grade solution eliminates the costs of supporting and maintaining your own Linux distribution
- Leveraging standard technologies frees up engineering resources for competitive differentiation
- Wind River Professional Services offers access to a global team of automotive domain and Linux experts
- Going to market with a proven and trusted partner increases confidence