



# WIND RIVER HELIX VIRTUALIZATION PLATFORM FOR AEROSPACE AND DEFENSE

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Wind River® Helix™ Virtualization Platform is an adaptive software environment that consolidates multi-OS and mixed-criticality applications onto a single compute software platform, simplifying, securing, and future-proofing designs in the aerospace and defense markets. Applications can be legacy or new capability, based on industry standards such as ARINC 653, POSIX®, or FACE™ or based on operating systems such as Linux, VxWorks®, and others.

Designed for modularity and application portability, Helix Platform facilitates rapid capability integration and product upgrades, enabling a path to application consolidation for systems requiring mixed-criticality applications—from highly dynamic environments without certification requirements to highly regulated static applications, as well as systems requiring a mix of safety-certified applications with non-certified ones. The commercial off-the-shelf (COTS) platform helps aerospace and defense suppliers develop innovative, software-defined devices that enable future generations of advanced capability, in a cost-effective and low-risk manner.

## FEATURES AND BENEFITS

- **Proven market excellence:** Developed from the Wind River market-leading RTOS product line VxWorks, Helix Platform leverages a successful track record of nearly 40 years of software innovation deployed in over 2 billion devices and more than 90 civilian and military aircraft. VxWorks is included in Helix Platform, and has been trusted by more than 9,000 companies and chosen as the RTOS to go to Mars with NASA for nearly 25 years. VxWorks supports C11 and C++14 programming languages, as well as standards-based virtualization of common devices, including serial, networking, and storage.
- **Modular architecture:** The platform allows for maximized portability and easy application integration.
- **Adaptability:** Development and deployment of static or dynamically configured systems running applications such as machine learning and analytics
- **Industry standards conformance:** Simultaneous support for application development follows standard APIs such as ARINC 653 APEX API, FACE, POSIX, and VxWorks.
- **Support for unmodified guest OSes:** OS-agnostic virtualization and separation technology eases portability of legacy applications, bringing them to modern operating systems next to new applications. Guest OS support includes VxWorks, Linux, Microsoft® Windows®, and others.

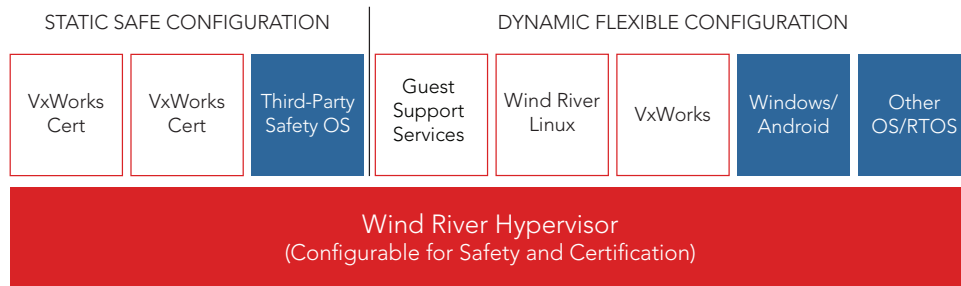


Figure 1. Wind River Helix Virtualization Platform architecture

- **Mixed-criticality support:** Hardware virtualization assist allows safe and non-safe applications to run in parallel on separate cores, increasing safety, security, and robustness (see Figure 1).
- **Cybersecurity protection:** Robust partitioning restricts access control and resource allocation, improving the overall integrity of the system. This is especially important when combining real-time and open source applications.
- **High performance and low jitter:** Deterministic performance for the most demanding embedded real-time applications is guaranteed. The Type 1 hypervisor virtualization layer provides full control over hardware configuration. It allows for high-performance compute cycles and low-overhead I/O access using the hardware virtualization accelerators available in today's processors. In addition, it has a minimal footprint, high throughput, and low latency inter-process communication (IPC).
- **Rapid development environment:** Standard workflows are used to configure, build, develop, and debug. The configuration model is either driven by a statically defined XML or set up dynamically as per a defined configuration.
- **A broad range of architectures and CPUs:** Helix Platform provides multi-core hardware support and availability on the latest Arm® and Intel® architectures, and CPUs from Intel, NXP, and Xilinx that enable both 32- and 64-bit guest OSes.

## OPTIMIZED, INTEGRATED DEVELOPMENT SUITE

### Wind River Workbench

Helix Platform includes Workbench, which offers best-in-class development and debugging tools along with cutting-edge system analysis tools for optimizing the Helix Platform environment. A fully integrated Eclipse-based open development suite optimized to support design, development, test, and certification of applications, Workbench consists of a project facility to define application resources and an XML configuration tool to easily define the static configuration required for safety-critical applications.

Helix Platform also enables the intellectual property and security separation between the platform supplier, the application supplier, and the system integrator, providing a framework for multiple suppliers to deliver components to a safety-critical platform.

### **Wind River Simics**

Wind River Simics® enables software to run on virtual platforms just as it does on physical hardware. Along with its capabilities for scripting, debugging, inspection, and fault injection, Simics enables you to define, develop, and integrate your systems without the constraints of physical target hardware. Simics provides you the access, automation, and collaboration required to enable agile and continuous development practices.

### **WIND RIVER PROFESSIONAL SERVICES**

Our [CMMI Level 3](#)-rated services organization offers a specialized Safety Critical Services Practice that can deliver safety certification evidence for additional software components. Our services team of engineers has extensive experience delivering design, integration, and optimization services tailored to the needs of your industry and is fully equipped to provide professional certification services at any level, including certified board support packages (BSPs), middleware, and application software. For more information, visit [www.windriver.com/services](http://www.windriver.com/services).

### **WIND RIVER EDUCATION SERVICES**

Wind River offers technical, hands-on training, mentoring, and on-demand learning. For more information, visit [www.windriver.com/education](http://www.windriver.com/education).

### **WIND RIVER CUSTOMER SUPPORT**

Helix Platform is backed by our award-winning global support organization. We offer live help in multiple time zones, the online Wind River Support Network with multifaceted self-help options, and optional premium services to provide you the fastest possible time-to-resolution. For more information, visit [www.windriver.com/support](http://www.windriver.com/support).

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