

VxWORKS PLUS

Advanced Capabilities to Meet Industry-Specific Requirements

VxWorks® Plus delivers all of the rich feature set of the gold-standard VxWorks real-time operating system (RTOS), with an additional collection of advanced middleware and protocols for security, safety, networking, connectivity, device manageability, user interface (UI), and graphics that customers need to create the most demanding devices for the Internet of Things (IoT).

VxWORKS RTOS: THE FOUNDATION FOR EMBEDDED INNOVATION

Powering over 2 billion intelligent devices, VxWorks is the world's most widely deployed RTOS. It delivers unrivaled deterministic performance and sets the standard for a scalable, future-proof, safe, and secure operating environment for connected devices. Leading global innovators such as ABB, Airbus, Alcatel-Lucent, BD Biosciences, Boeing, Delphi, Eurocopter, Huawei, Mitsubishi, NASA, Northrop Grumman, Siemens, and Varian leverage VxWorks to create award-winning, innovative, IoT-ready products effectively and efficiently.

VxWorks Plus supports the broadest spectrum of 32-bit, 64-bit, and multi-core silicon architectures, including ARM®, PowerPC®, and Intel®. Its portfolio of additional middleware and optional technology components, as well as a large ecosystem of validated complementary third-party hardware and software solutions, enables you to differentiate your platforms with best-of-breed capabilities, reduce development costs, and accelerate time-to-market.

Optional add-on technology products enhance VxWorks Plus with a broad assortment of capabilities that help you meet the most stringent security, safety, and certification requirements specific to your industry.

FEATURES AND BENEFITS

Enabling the Future of Connected Devices

- **Expandable and upgradable architecture:** A modular, future-proof platform, VxWorks Plus can adapt and evolve to match changing market requirements, your needs, and technology advancements. The VxWorks core kernel is separate from protocols, applications, and other packages, enabling upgrades and new feature additions to be accomplished faster and with minimal retesting of the entire system.
- **Scalable footprint:** VxWorks is the ubiquitous RTOS foundation spanning tiny implantable medical devices, large intelligent systems forming the smart grid, and everything in between. It is scalable to meet your project's unique memory footprint, functionality, and processing power requirements.

- **Uncompromising safety and security:** For over 30 years, VxWorks has been the foundation that enables leading innovators in the aerospace and defense, automotive, industrial, consumer, and medical industries to create differentiated, certifiable safety- and security-critical systems. The optional add-on Security Profile for VxWorks delivers a comprehensive set of features to efficiently and effectively protect devices, data, and intellectual property. The optional add-on Safety Profile for VxWorks delivers advanced safety partitioning capabilities and an optional IEC 61508 SIL3 certification evidence package that helps drive down costs and time-to-certification.
- **Proven virtualization technology:** The optional add-on Virtualization Profile for VxWorks delivers a real-time Type 1 hypervisor that enables consolidation of multiple standalone hardware platforms on one multi-core processor, helping reduce bill-of-material (BOM) costs and speed time-to-market.
- **Broad connectivity:** Connectivity is a key requirement for IoT, so VxWorks Plus supports industry-leading connectivity standards and networking protocols, such as Routing Information Protocol (RIP), Quality of Service (QoS), and Socket Controller Area Network (SocketCAN), out-of-the-box. The modular nature of VxWorks Plus allows you to add connectivity and networking capabilities after the fact and bring many previously disconnected devices online without reworking the core of their embedded software.
- **Lower risk and faster integration of third-party technology:** VxWorks Plus' unmatched ecosystem of hardware and software technology partners enables you to differentiate your product offerings with leading-edge features and capabilities and bring your devices to market faster, while reducing risks and development costs.

Build Better Products with the Industry's #1 RTOS

- **Guaranteed real-time performance and reliability:** Capable of dealing with the most demanding time constraints, VxWorks Plus is a high-performance RTOS tuned for both determinism and responsiveness. For example, NASA trusted VxWorks to control the \$2.5B Mars Curiosity rover and land it perfectly on a planet 352 million miles away.
- **Better reliability with state-of-the-art memory protection:** Memory management unit (MMU)-based memory protection increases reliability. VxWorks Plus incorporates a process-based model that provides user-mode application execution in addition to its traditional kernel-mode execution.
- **Multi-core benefits, maximized:** VxWorks Plus delivers comprehensive multi-core processor support, including asymmetric multi-processing (AMP) and symmetric multiprocessing (SMP) OS configurations and hardware-optimized multi-core acceleration. The optional Safety Profile and Virtualization Profile enable even greater flexibility in harnessing the power of multi-core, as well as additional consolidation options to reduce size, weight, and power consumption (SWaP).

ADVANCED MIDDLEWARE AND PROTOCOLS FOR VxWORKS PLUS

VxWorks Plus adds advanced security, device manageability, user interface and graphics, safety, and networking capabilities to the VxWorks RTOS. The additional middleware and protocols in VxWorks Plus include the following:

Security

- Secure Sockets Layer (SSL) protocol
- Secure Shell (SSH) protocol
- Cryptography Libraries
- Internet Protocol Security (IPsec) and Internet Key Exchange (IKE)
- Hardware-based IPsec acceleration
- Firewall
- Extensible Authentication Protocol (EAP)
- RADIUS and Diameter
- Wireless Security

Device Manageability

- Web Services: HTTP, XML, and GSOAP
- WebCLI
- Simple Network Management Protocol (SNMP)
- Web Server
- MIBway for Web Server
- MCE
- cURL

User Interface and Graphics

- Open VG software-driven vector graphics stack
- OpenGL ES 2D and 3D graphics stack with Graphics Processing Unit (GPU) support
- User Interface (UI) render library for 2D interfaces

Connectivity

- SocketCAN

Safety

- Time and Space Partitioning

Advanced Networking

- RIP and RIP next generation (RIPng)
- Virtual Router Redundancy Protocol (VRRP)
- QoS/Differentiated Services (DiffServ)

WIND RIVER EDUCATION SERVICES

Wind River provides education services that speed the time-to-productivity of your project team. We offer deeply technical, hands-on training led by experienced engineers, mentoring to accelerate technology integration, and on-demand learning. Our services are flexible to meet the learning needs of your team and the constraints of your budget. For more information, visit www.windriver.com/education.

WIND RIVER PROFESSIONAL SERVICES

A CMMI Level 3–certified organization, Wind River Professional Services offers consultative thought leadership, deep technical capabilities, and innovative industry solutions to help you overcome your most strategic and pressing development challenges. Our industry-specific offerings span the entire project lifecycle, including consulting, architecture, design, development, porting, integration, and maintenance services. For more information, visit www.windriver.com/services.

OPTIONAL TECHNOLOGY ADD-ON PRODUCTS

- **Safety:** Safety Profile adds advanced time-partitioning capabilities to enable reliable consolidation of multiple applications with different levels of criticality on one platform, single- or multi-core. This consolidation helps you drive down BOM and maintenance costs. An optional IEC 61508-3 SIL3 certification evidence package helps shorten time-to-certification for the entire system.
- **Security:** Security Profile delivers a comprehensive set of features to safeguard devices, data, and intellectual property in the ever-connected world of IoT. Security technologies—such as secure boot, secure run-time loader, advanced user management, network security, and encrypted containers—protect devices and data at every stage, from boot-up to operation to data transmission to while at rest. Security Profile is a software-based solution that can be reinforced for security-critical applications with the hardware-based CodeMeter® security offering from Wibu-Systems.
- **Virtualization:** Virtualization Profile is a real-time embedded, Type 1 hypervisor that enables the combination of multiple workloads on a single multi-core processor, helping drive down hardware costs and allowing new capabilities to be added more quickly. Optimized for developer productivity and fully integrated into VxWorks Plus, the hypervisor utilizes standard VxWorks Plus workflows to configure, build, develop, and debug.

Safety Profile and Security Profile can be deployed with VxWorks and VxWorks Plus. Virtualization Profile is OS-agnostic; that is, it can run multiple operating systems, including VxWorks and VxWorks Plus (with or without add-on products), Wind River® Linux, and others, inside their respective virtual machines on the same hardware.

WIND RIVER CUSTOMER SUPPORT

VxWorks Plus 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. We are proud to have achieved Service Capability and Performance certification, recognized as the gold standard for delivering world-class customer support. For more information, visit www.windriver.com/support.

HOW TO PURCHASE

Visit www.windriver.com/company/contact to find your local Wind River sales contact. To have a representative contact you, call 800-545-9463 or write to inquiries@windriver.com.

