Deployed in over 1.5 billion devices, VxWorks® is the world’s leading real-time operating system (RTOS). With VxWorks, manufacturers of embedded systems gain a competitive edge by bringing industry-leading devices to market faster, while reducing risks and development costs. VxWorks delivers hard real-time performance, determinism, and low latency along with the scalability, security, and safety required for aerospace and defense, industrial, medical, automotive, consumer electronics, networking, and other industries. It has become the RTOS of choice for such leading innovators as ABB, Alcatel-Lucent, BD Biosciences, Boeing, Delphi, Eurocopter, Huawei, Mitsubishi, NASA, and Northrop Grumman.

VxWorks supports the broadest spectrum of silicon architectures, including ARM®, PowerPC, and Intel®. Its large ecosystem of complementary third-party hardware and software technologies enables customers to differentiate their product offerings with cutting-edge features and capabilities, and also accelerate time-to-market and cut costs by deploying out-of-the-box integrated and validated solutions.

With over 30 years of leadership in embedded technology, Wind River® has now redefined VxWorks to help manufacturers of embedded devices meet the challenges of the era of the Internet of Things (IoT), where connectivity, scalability, and security are required. Its future-proof architecture can adapt and evolve to meet changing market requirements, customer needs, and technology advancements.

FEATURES AND BENEFITS

Seize the Opportunity of the Internet of Things

VxWorks 7, the breakthrough next-generation version of VxWorks, is a modular, configurable, and expandable platform for connected devices, engineered to help you succeed in the IoT era.

• **Lower system development costs with a single RTOS that scales:** VxWorks is the RTOS foundation for successful development of very small devices, large intelligent connected systems, and everything in between. It is scalable to meet your project’s unique memory footprint, functionality, and processing power requirements. You control how much of the operating system you need. For example, VxWorks includes an optional small-profile microkernel that is built on the same platform as standard VxWorks, so that higher- and lower-end devices can be efficiently developed as one connected system.

• **Broad connectivity:** Connectivity is a key requirement of IoT, and VxWorks provides support for industry-leading standards and protocols and delivers high-performance networking capabilities out of the box. VxWorks adds connectivity protocols such as USB, CAN, Bluetooth, and Continua, as well as the modularity that can help bring many previously disconnected devices online without reworking the core of their embedded software.
• **Complete security for connected devices:** IoT demands pervasive connectivity that exposes devices and systems to more security risks than ever before. VxWorks allows you to design your embedded system to the necessary level of security by leveraging a comprehensive set of built-in security features for the development, boot and execute, operation, transmission, and idle/power down stages.

• **Expandable and upgradable architecture:** The modular, future-proof architecture of VxWorks separates the core kernel from protocols, applications, and other packages, which enables you to enrich your products with new features and capabilities as standards and market requirements evolve—without retesting or recertifying the entire system.

• **Lower risk and fast integration of third-party technology:** VxWorks’ unmatched ecosystem of readily available tested and validated third-party technologies enables you to differentiate your product offering with leading-edge features and capabilities and bring devices to market faster, while reducing risks and development costs.

• **Easier upgrades and less testing:** The new modular VxWorks architecture enables you to promptly implement upgrades and bug fixes as they pertain to packages and compilers without having to change or retest the entire system, including the operating system core.

**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 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.

• **Maximized multi-core benefits:** VxWorks delivers comprehensive multi-core processor support, including asymmetric multiprocessing (AMP) and symmetric multiprocessing (SMP) OS configurations and hardware-optimized multi-core acceleration capabilities. Adding the VxWorks microkernel and Wind River Hypervisor technologies enables even greater flexibility in maximizing the power of the embedded system’s hardware. Powerful yet flexible multi-core capabilities and scalability make VxWorks an optimal choice to optimize size, weight, power, and performance in next-generation connected intelligent embedded systems.

• **Better reliability with state-of-the-art memory protection:** Memory management unit (MMU)-based memory protection increases reliability. VxWorks incorporates a process-based model that provides user-mode application execution in addition to its traditional kernel-mode execution.

• **Time partitioning:** An enhanced scheduler enables time partitioning for extreme reliability, preventing applications from overloading the CPU.

• **Lower size, weight, and power consumption:** Technology innovations in embedded processors, such as multi-core support and improved power management, have opened the door for increased system consolidation for embedded systems. VxWorks platforms provide flexible multi-core support for the latest embedded processors and systems on chips (SoCs), offering an ideal consolidation platform to reduce size, weight, and power (SWaP).
Ensure Compliance with Safety and Security Requirements for Certified Environments and Mission-Critical Systems

VxWorks trusted system platforms have a proven track record in safety- and security-certified environments. A high-reliability RTOS, VxWorks provides hard real-time performance and determinism along with the certification evidence required by the highest safety and security standards. You can count on VxWorks to run forever, error-free.

Leverage Your Existing Investment in VxWorks

VxWorks 7 is designed to ease migration from earlier versions of VxWorks such as VxWorks 6.x. VxWorks 7 kernel supports the VxWorks 6.x kernel operating environment. Most board support packages (BSPs), drivers, and user applications developed for or ported to VxWorks 6.x will run in the VxWorks 7 kernel.

Develop Smarter with the Workbench Development Suite

Using standards such as Eclipse, CDT, and TCF, Wind River Workbench offers best-in-class development and debugging tools along with cutting-edge system analysis tools for optimizing the VxWorks environment. VxWorks simulation and system configuration tools are also included in Workbench.

AVAILABLE VXWORKS PROFILES

- **VxWorks 7 core platform**: VxWorks 7 is the culmination of a 30-year track record of Wind River leadership in RTOS technology. This versatile platform is used for devices in industries ranging from aerospace and defense, industrial, medical, automotive, and small-footprint consumer devices to large networking equipment.

- **Consumer Profile**: This platform offers a fast-boot, small-footprint run-time environment ideal for memory-constrained devices. Platform targets include mobile handheld, digital imaging, residential gateways, and broadband access devices.

- **Industrial Profile**: This platform provides industrial device manufacturers with essential multimedia and connectivity middleware, including drivers and protocols for connected devices on the factory floor, wireless peripherals, and other devices within the network infrastructure. Target applications include industrial automation, building automation, medical, transportation, and test and measurement devices.

- **Medical Profile**: Comprising technology solutions designed to meet the unique needs of medical device manufacturers, approval-ready for medical devices up to Class III, this platform alleviates developer challenges with ready-to-use security, safety, and scalability functionality. Platform customers receive a compliance package with the documentation necessary for companies to get medical approval from the U.S. Food and Drug Administration.

- **Networking Profile**: This platform enables customers to rapidly create, test, deploy, maintain, and manage high-quality network (wired and wireless) infrastructure devices. The platform offers an extensive suite of security protocols to protect network data. It is ideally suited for wireless infrastructure, enterprise network, core networking, network edge, LTE, and broadband access devices.
VXWORKS PLATFORM COMPONENTS

Included in each platform are VxWorks, a fully 32-bit and 64-bit capable RTOS, and Wind River development and multi-core tools.

- Industry-leading VxWorks RTOS
  - Single and multi-core processor support with AMP and SMP
  - 32-bit and 64-bit CPUs
  - Memory-protected, real-time process (RTP) user space environment
  - Backward compatibility with previous versions of VxWorks 6.x
  - Kernel scalability, modularity, and performance tuning using VxWorks Source Build
  - State-of-the-art memory protection and memory management

- Wind River Workbench
  - Eclipse-based integrated development environment
  - Eclipse Target Communication Framework (TCF)
  - Full-featured Eclipse C/C++ Development Tooling (CDT)
  - Optimizing compilers
    - Wind River Diab Compiler for VxWorks
    - Intel C++ Compiler and Intel Performance Primitives for VxWorks
    - Wind River GNU Compiler

- Connectivity solutions
  - Multi-OS messaging using TIPC and Wind River Multi-OS IPC (MIPC)
  - Bluetooth
  - USB (host, peripheral, and OTG support)
  - CAN
  - File systems
    - NAND and NOR flash support
    - dosFs (FAT-compatible file system)
    - Highly reliable file system (HRFS) with configurable commit
  - Dual-mode IPv4/IPv6 network stack, with IPv6 Ready Logo certification

- Advanced networking features (included in VxWorks industry-specific platforms)
  - VPNC-certified IPsec and SSL
  - Encryption key management
  - Firewall and NAT
  - Mobile IP
  - Wireless, wireless security, EAP
  - MACsec
  - CLI, Web, MIBway
  - SNMP

- Security
  - Digitally signed modules (X.509)
  - Encryption
  - Centralized user database
    - Password management
    - Ability to create/delete users at run time
  - Encrypted data storage
• User interface
  – Graphics
    - OpenVG
    - OpenGL
    - Tilcon
    - Frame Buffer Driver
  – EV Dev Interface
  – Audio and media

WIND RIVER PROFESSIONAL SERVICES
Wind River Professional Services enables companies to reduce risk and improve competitiveness. Professional Services offers a variety of services around VxWorks platforms, including board support package development and customization, boot optimization for selected hardware, and secure boot services, in addition to installation, mentoring, design, and more. For more information, visit www.windriver.com/services.

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 CUSTOMER SUPPORT
VxWorks 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.