

VXWORKS 653 4.0 MULTI-CORE EDITION

To be competitive in the avionics market, device manufacturers must deliver increasingly complex products at or below budget, within constantly shrinking time frames, and often with stricter constraints on device size, weight, and power (SWaP). Furthermore, in avionics applications, human lives are often at stake—so devices must be reliable and support strict safety certification standards.

To meet these needs, the avionics industry has defined a consolidation specification for integrated modular avionics (IMA) systems: ARINC Specification 653. Use of this internationally accepted specification enables multiple avionics vendors and hosted-function suppliers to safely deploy integrated applications on a shared multi-core hardware platform, while maintaining complete system conformance with rigorous avionics safety standards such as RTCA DO-178C, EUROCAE ED-12C, RTCA DO-254, EUROCAE ED-80, RTCA DO-297, and EUROCAE ED-124.

VxWorks® 653 4.0 Multi-core Edition is a safe, secure, and reliable real-time operating system (RTOS) that delivers an ARINC 653–compliant system by providing robust time and space partitioning to ensure fault containment and the ability to upgrade applications with minimal test and integration demands.

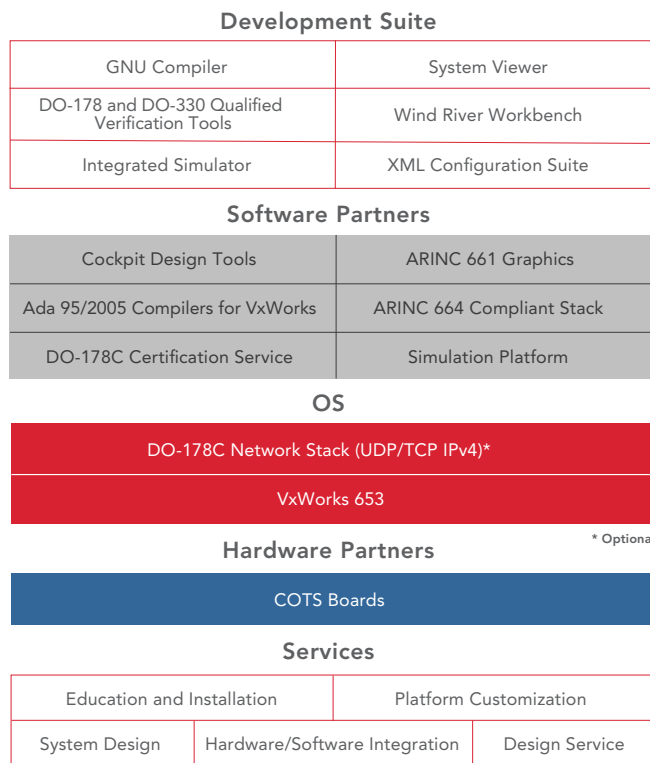


Figure 1. VxWorks 653 4.0 Multi-core Edition

FEATURES AND BENEFITS

- High safety and security assurance with multi-core scheduler utilizing hardware virtualization assist:** Enables the virtualization of unmodified guest operating systems, allowing applications to run in parallel on separate cores and virtualization environments, increasing security, robustness, and compute capacity
 - Reduced bill of materials (BOM)
 - High performance and low jitter due to two-level virtual machine architecture
 - Robust support of multiple levels of safety criticality
- Industry standards conformance:** Lowers upgrade costs by providing high portability
 - Simultaneous support for ARINC 653 APEX, VxWorks, POSIX®, Ada, C, and C++ application programming interfaces (APIs)
 - Unmodified guest OS support that eases portability for legacy applications
- Development tools:** Reduces development time and cost
 - Independent supplier build process, reducing the impact of code changes across multiple development teams
 - Wind River® Workbench development suite based on the Eclipse open tool architecture, enabling wide integration of industry toolchains
 - Wind River Simics® support for system simulation and automation
- Hardware support and availability:** Intel® architecture
- Proven market excellence:** Built on the VxWorks 653 rich pedigree of single, dual core, and multi-core development proven in more than 400 programs delivered by 200+ customers and 80+ aircraft
 - Airbus Helionix, Airbus MRTT, and Airbus A400M
 - Boeing 787 Dreamliner, Boeing C-130 AMP, Boeing KC-767 tanker, and Boeing P-8 Poseidon multi-mission maritime aircraft

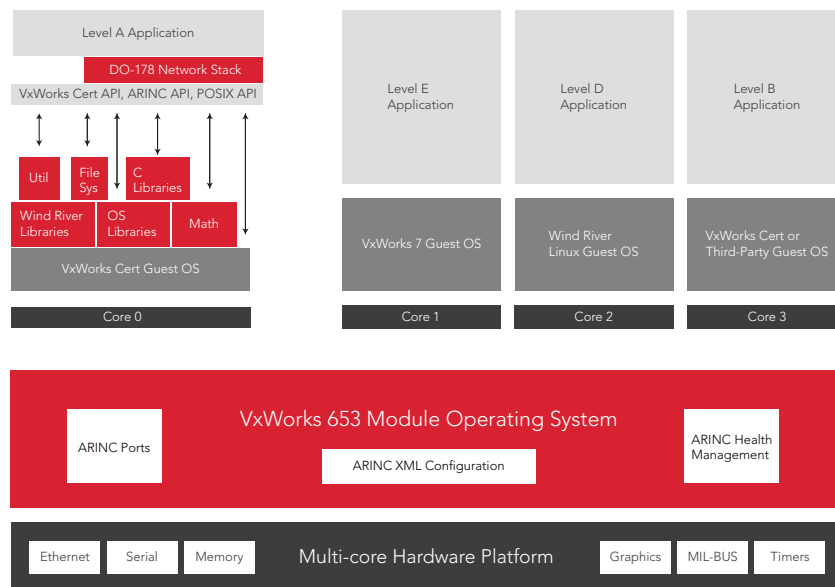


Figure 2. IMA design with VxWorks 653 Multi-core Edition

OPTIMIZED, INTEGRATED DEVELOPMENT SUITE

Wind River Workbench 4

VxWorks 653 Multi-core Edition includes Wind River Workbench 4, a fully integrated Eclipse-based development suite optimized to support design, development, test, and certification of applications to meet RTCA DO-178C and EUROCAE ED-12C DAL A. The development suite consists of a project facility to define application resources and an XML configuration tool to easily define the static configuration records required for ARINC 653 applications.

The VxWorks 653 development suite also offers RTCA DO-330 and EUROCAE ED-215 qualified development and verification tools that assist in the application test for credit and also enable the insertion of new applications into a tested environment without forcing a retest of the entire platform. This facilitates faster deployment of ARINC 653 systems, conserving certification testing resources and significantly reducing the cost of change.

The RTCA DO-330 and EUROCAE ED-215 qualified XML configuration tool suite allows developers to make changes to application or system configuration information without rebuilding and retesting the entire system. Changes to independent applications can be made without the need to retest or recertify other applications or the underlying OS in the system. This significantly reduces the time to achieve initial certification, as well as the cost of change and maintenance throughout the device lifecycle. In addition, this tool fully complies with the RTCA DO-297 and EUROCAE ED-124 IMA Development Guidance and Certification Considerations document, enabling intellectual property and security separation between the platform supplier, the application supplier, and the system integrator.

Unique to this platform are three high-performance web tools that aid in the deployment of certified applications. These tools:

- Allow developers to measure CPU use by individual applications or all applications
- Report memory usage of various areas of the OS, including heaps, stacks, ports, and health monitoring memory use
- Monitor traffic across sampling and queuing ports

Along with the OS, the interfaces to these tools are qualified under RTCA DO-330 and EUROCAE ED-125 guidelines, enabling testing of the exact deployment environment for certification with minimal testing demands.

Wind River Simics

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

INTELLIGENT LICENSING MODEL

By making VxWorks 653 Multi-core Edition available under two licensing models, Perpetual (paid up front) licensing and Enterprise License Agreement (ELA) subscription-based licensing, Wind River offers businesses flexibility in project budgeting and ease in license management across the enterprise. Two modes of production licensing (production license or production license-free) offer the option of capturing license fees in research and development or manufacturing.

PROVEN, RELIABLE PARTNER

The right technology partner can greatly increase your odds of success in a highly competitive marketplace. As the industry leader, Wind River has met and exceeded the requirements of our customers and their markets for more than 35 years, and our technology is found in more than 2 billion global devices. A vibrant, wholly owned subsidiary of Intel® Corporation, Wind River is positioned to continue our high level of support with established device manufacturers and new companies alike.

COMMERCIAL-GRADE SUPPORT AND SERVICES

VxWorks 653 includes full access to the Wind River worldwide support organization, with 24/7 product support and training available through multiple channels. We also offer a specialized aerospace and defense services practice—a team of Wind River Professional Services engineers with extensive experience in delivering design, integration, and optimization services tailored to the needs of your industry, including creating RTCA DO-178C and EUROCAE ED-12C certification artifacts for board support packages (BSPs) and additional software libraries and modules. VxWorks 653 contains no International Traffic in Arms Regulations (ITAR) restricted code.

