

Wind River VxWorks DO-178B Platform

Wind River VxWorks DO-178B Platform enables VxWorks developers access to Wind River's commercial off-the-shelf (COTS) platform for delivering applications that must be certified to the stringent requirements of RTCA DO-178B and EUROCAE ED-12B (Software Considerations in Airborne Systems and Equipment Certification) and other related software standards. With the VxWorks DO-178B Platform, developers can take full advantage of technological advances in microprocessors that the VxWorks COTS real-time operating system (RTOS) enables, with the assurance that they will have a strong operating system foundation to meet the most demanding safety certification standards.

COTS Without Compromise

The avionics market has a history of success using standard commercial microprocessors for a variety of flight-critical applications that can directly affect aircraft safety and reliability. To ensure that airborne systems contain a consistent high quality to meet the demands of a variety of safety criticality levels, the global aerospace community developed the RTCA DO-178B and EUROCAE ED-12B airborne avionics standards to provide guidance on creating, certifying, and deploying these devices. These specifications are now uniformly enforced by a wide range of commercial aviation control organizations, including the U.S. Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), Transport Canada, and others.

The aviation community reviewed input from every aerospace manufacturer in the world to create this standard that specifies 66 objectives that describe recommended software life cycle and testing guidelines for the aviation industry. Wind River's DO-178B and ED-12B COTS Certification Evidence DVD contains a complete COTS certification package that meets these stringent objectives and therefore enables our customers faster time-to-market and gives equipment manufacturers a competitive advantage in the ability to leverage additional, ready-made technology from Wind River partners.

Integrated Development Environment

VxWorks DO-178B Platform includes the award-winning Wind River Workbench development suite. Wind River Workbench is an Eclipse-based collection of tools designed to accelerate time-to-market for developers building devices with VxWorks real-time operating systems. 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, including powerful tools for debugging, code analysis, and test. Based on the open Eclipse framework, Workbench can be extended through in-house, third-party, open source, and commercial plug-ins.

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Included Components

- Wind River Workbench 3.1
- VxWorks 6.6
- Wind River VxWorks 6.6 for DO-178B Platform
- GNU Compiler 4.1.2
- Wind River Compiler 5.6.0
- MPC 8349E Reference BSP (PowerPC 603 architecture, PowerPC e300 core)

Optional Components

- UDP/IPv4 network stack with multicast for DO-178B Platform
- TCP/UDP/IPv4 network stack with multicast for DO-178B Platform
- Workbench plug-in for on-chip debugging (OCD)

Supported Hosts

- Windows XP Professional, Windows Vista (Business and Enterprise)
- Solaris 9, Solaris 10
- Red Hat Enterprise Linux, Workstation 4 and 5
- Red Hat Fedora 9
- OpenSUSE Linux 10.2 and 11

In addition to the Workbench Eclipse-based environment, VxWorks DO-178B Platform provides a full-featured command-line build system and debugging tools for developers who prefer this type of environment. These command-line tools can be easily integrated into a customized build system. The Workbench development environment helps reduce development costs, helps manage code complexity, eases tool integration, and enables standardization on a common development foundation across the enterprise.

Leveraging the Power of VxWorks 6

VxWorks DO-178B Platform is based on the standard VxWorks 6 operating system. VxWorks DO-178B Platform includes a full commercial version of VxWorks 6.6 as an integral part of the development package. This packaging enables the use of

Development Suite

Wind River Workbench	
Wind River Compiler	Wind River WDB Debugger
GNU Compiler	Host Shell

Software Partners

Java/Ada	OpenGL Graphics
DO-178B Certification Services	Simulation Platform
Design Tools	Test Tools

Operating System and Middleware

DO-178B Level A/B/C/D Certification Evidence*
DO-178B Certified Network Stack (TCP/UDP/IPv4)*
VxWorks Cert 6.6

*Optional

Hardware Partners

COTS Boards

Services

Education Services and Installation	Platform Customization
System Design	Design Services
Hardware/Software Integration	

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a standard VxWorks 6 development environment, including the Wind River run-time analysis tools, Simulator, System Viewer, and Source Analyzer.

VxWorks 6.6 for DO-178B includes more than 240 system calls selected from VxWorks 6.6, all of which are fully deterministic and deployable under guidelines outlined in the DO-178B safety standards. These calls include cache, clock, event flag, interrupt, memory management, message queue, ring buffer, semaphore, signal, and task management calls, along with a wide array of C library functions.

Certification Evidence DVD

VxWorks DO-178B Platform is backed by the industry's most comprehensive set of certification artifacts, which support all RTCA DO-178B and EUROCAE ED-12B Level A requirements. Wind River's DO-178B and ED-12B COTS Certification Evidence DVD contains all of the required DO-178B Level A documentation, the software vulnerability analysis document, full source code, tests, code and test reviews, all test results, and full object-level code coverage listings. All files are fully hyperlinked to enable rapid traceability analysis of certification data, from the requirements, design, source and

binary code, and test cases, using a simple browser. With this certification evidence DVD, the review of printed and computer-based certification artifacts at separate locations is no longer necessary.

Commercial-Grade Support and Services

VxWorks DO-178B Platform includes full access to Wind River's worldwide support organization, with 24/7 product support and training available through multiple channels. We also offer a specialized Aerospace and Defense Services Practice that can deliver DO-178B certification evidence for additional software components. Our A&D 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.

Extensive Partner Ecosystem

The right technology partner can greatly increase your odds of succeeding in a highly competitive marketplace. As the industry leader in Device Software Optimization (DSO), Wind River has met and exceeded the requirements of our customers and their markets for more than 25 years. More than 4,000 businesses have leveraged our skills, experience, and expertise to successfully deploy and support more than 350 million devices. A vibrant, publicly traded company, Wind River is positioned to stay the course with established device manufacturers and new companies alike.

To ensure a complete range of integrated technologies, Wind River has established the A&D industry's widest-ranging partner ecosystem, joining forces with leading hardware and software providers to address such technologies as COTS boards, system modeling tools, development and design tools, test tools, and certification services.

Flexible Business Models

Wind River complements the technical advantages of VxWorks platforms with a choice of proven business models. Under our Enterprise License Model, the VxWorks DO-178B Platform is offered as an annual, per-developer subscription, applicable across the enterprise. The subscription includes Wind River support and all product updates. VxWorks DO-178B Platform is also available via our Perpetual License Model, which provides flexibility for companies desiring project-based licensing.