



VXWORKS 653 PLATFORM 2.X ESSENTIALS

COURSE DESCRIPTION

The VxWorks® 653 Platform 2.x Essentials course provides engineers with a fast, cost-effective way to acquire the skills necessary to develop safety-critical applications with Wind River® VxWorks 653 Platform.

After this course, participants will be able to perform the following:

- Take a requirement specification to a working application
- Develop, test, and debug safety-critical applications with the VxWorks 653 real-time operating system (RTOS)
- Accelerate the development and configuration of ARINC 653 safety-critical systems
- Use VxWorks 653-specific Wind River Workbench facilities to configure VxWorks 653 applications
- Build applications within partitions, and use ARINC ports for I/O from partitions
- Use core tools efficiently: debugger, Wind River System Viewer host and target-based shell, monitoring, network stacks

PRODUCTS SUPPORTED

- Wind River VxWorks 653 Platform 2.x

COURSE FORMAT

- This four-day expert-led course consists of lectures and lab sessions.
- Attendees use VxWorks 653 Platform 2.x to gain experience with the topics presented.
- Participants examine and exercise simulated network topologies in hands-on labs.
- Participants receive individual guidance from an expert engineer who has extensive experience with Wind River technologies.

AUDIENCE

- Application developers creating standards-based safety-critical applications
- Developers who primarily use C and need to develop partition-based applications using the features of the VxWorks 653 RTOS

PREREQUISITE SKILLS

- One year of C or C++ programming experience

Course title:	VxWorks 653 Platform 2.x Essentials
Duration:	Four days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Content:	Day 1: Getting Started with VxWorks 653; Partitions; Processes; Intra-partition Communication Day 2: Inter-partition Communication; Health and Error Management; System Architecture; Shared Data Regions; Advanced System Creation Day 3: DO-178B Network Stack; Advanced Communications; VxWorks 653 Source Level Debugging; Debugging VxWorks 653 with the Host Shell; VxWorks 653 System Viewer Day 4: VxWorks 653 Monitoring Tools; Multi-core Systems; Deploying a VxWorks 653 System; VxWorks 653 Certification

PREREQUISITE COURSES

- None

RELATED COURSES

- VxWorks 653 Platform 2.x Porting and Advanced Topics

SYLLABUS

Day 1

GETTING STARTED WITH VXWORKS 653

- ARINC 653 overview
- The specification
- System overview
- Creating a system

- Booting and connecting host and target
- Hands-on lab
- Key references
- **LAB: Getting Started with VxWorks 653**

PARTITIONS

- Partitions introduction
- Essentials
- Key references

PROCESSES

- Time in ARINC 653
- Introduction to processes
- Essentials
- Hands-on lab
- Key references
- **LAB: Scheduling VxWorks 653 Processes**

INTRA-PARTITION COMMUNICATION

- Intra-partition communication introduction
- Essentials
- Hands-on lab
- Key references
- **LAB: Communicating Within a Partition**
- **LAB: Synchronizing VxWorks 653 Processes**
- **LAB: Protecting Shared Resources**

Day 2

INTER-PARTITION COMMUNICATION

- Inter-partition communication introduction
- Essentials
- Hands-on lab
- Key references
- **LAB: Communicating Between Partitions**

HEALTH AND ERROR MANAGEMENT

- Introduction
- Process-level error handling
- Partition and module-level error handling
- Hands-on lab
- Key references
- **LAB: Monitoring the Health of Processes**

SYSTEM ARCHITECTURE

- Overview
- Concept review
- Partition space
- Kernel space
- Key references

SHARED DATA REGIONS

- Overview
- Configuration and access
- Key references

ADVANCED SYSTEM CREATION

- Project structure
- Adding partitions
- Hands-on lab
- Key references
- **LAB: Creating an Advanced VxWorks 653 System**

Day 3

DO-178B NETWORK STACK FOR VXWORKS 653

- Introduction
- Configuration
- ARINC 653 port usage
- Key references

ADVANCED COMMUNICATIONS

- ARINC 653 ports
- I/O device driver models
- Hands-on lab
- Key references
- **LAB: Using Advanced Communications with VxWorks 653**

VXWORKS 653 SOURCE LEVEL DEBUGGING

- Source code debugger overview
- Task mode debugging
- System mode debugging
- Hands-on lab
- Key references
- **LAB: Debugging VxWorks 653**

DEBUGGING VXWORKS 653 WITH THE HOST SHELL

- Basic features
- Advanced features
- Key references

VXWORKS 653 SYSTEM VIEWER

- Introduction
- Configuring System Viewer
- Using System Viewer
- Hands-on lab
- Key references
- **LAB: Using VxWorks 653 System Viewer**

VXWORKS 653 MONITORING TOOLS

- Memory usage monitoring
- Performance monitoring
- Port monitoring
- Hands-on lab
- Key references
- **LAB: Using VxWorks 653 Monitoring Tools**

MULTI-CORE SYSTEMS

- Introduction to multi-core
- VxWorks 653 multi-core support
- Hands-on lab
- Key references
- **LAB: Creating a Two-core AMP VxWorks 653 System**

DEPLOYING A VXWORKS 653 SYSTEM

- Cert subset
- Cert build versus debug build
- Debugging a deployed system
- Payloads
- Independent build, link, and load
- Key references

VXWORKS 653 CERTIFICATION

- Introduction to DO-178B/C
- Background and definitions
- DO-178B/C and software safety
- DO-178B/C processes and objectives

- Software verification
- VxWorks 653 considerations

OPTIONAL APPENDIXES

- Embedded RTOS overview
- XML primer

GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of device software experience, Wind River provides education services in every region of the world. Our private classes can be tailored to your needs by adding or removing topics from multiple courses. If you have more specific project challenges, Wind River Mentoring provides coaching by experienced engineers to help you integrate Wind River solutions into your environment. And when you're too busy to attend a whole class, our On-Demand Learning options provide around-the-clock access to advanced and specialized topics. All of our education services are led by expert engineers who are closely connected to the Wind River technical community for access to specific expertise.

CONTACT US

For more information about Wind River Education Services, visit www.windriver.com/education.

Wind River World Headquarters

500 Wind River Way
Alameda, CA 94501
USA
Toll-free: 800-545-9463
Tel.: 510-748-4100
Fax: 510-749-2454
training@windriver.com

Wind River EMEA

Steinheilstrasse 10
85737 Ismaning
Germany
Tel.: +49 89 962 445 0
Fax: +49 89 962 445 999
emea-training@windriver.com

