



EDUCATION SERVICES

# VXWORKS INTERMEDIATE APPLICATION DEVELOPMENT USE CASES

## COURSE DESCRIPTION

The VxWorks® Intermediate Application Development Use Cases course provides engineers with a solid grounding in a selection of the more sophisticated APIs provided in VxWorks.

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

- Effectively use two different signal interfaces to deal with synchronous events
- Leverage semaphores, message queues, and events to support applications with complex interactions
- Use three VxWorks-specific printing APIs that provide greater capability and flexibility than printf
- Use VxWorks APIs to map physical memory to the virtual address space of a real-time process
- Create and use shared libraries to decrease memory footprint of applications

## PRODUCTS SUPPORTED

- Wind River® VxWorks 6.9
- Wind River Workbench 3.3
- Wind River Simics 4.6

## COURSE FORMAT

- One day of hands-on use cases covering five topics, with technical assistance and individual guidance available from an expert instructor
- Use of VxWorks 6.9, Workbench 3.3, and Simics 4.6 to gain experience with the topics presented

## AUDIENCE

- Software developers needing to implement synchronous behavior in an application

Course title:	<b>VxWorks Intermediate Application Development Use Cases</b>
Duration:	One day
Format:	Hands-on use case sessions with support from an instructor
Content:	<b>Day 1:</b> Using Signals; Inter-task Coordination and Communication; Instrumenting Code by Printing; Accessing Physical Memory from a Real-Time Process; Using Shared Libraries from a Real-Time Process

- Engineers needing to provide graceful exception-handling capabilities to application developers
- Software developers needing to understand how to use VxWorks kernel calls in a complex application
- Software developers needing a variety of simple debug tools akin to printf but with greater capability
- Engineers required to provide device driver support within the context of a real-time process
- Software developers needing to share code between applications running in multiple real-time processes

## PREREQUISITE SKILLS

- Two to three years of C programming experience
- Solid understanding of VxWorks 6.x, both the kernel and real-time process programming environments
- Proficiency in the use of the Workbench tool suite, especially Workbench projects and target servers
- Functional knowledge of UNIX/Linux

## SYLLABUS

### Day 1

#### USE CASES

##### USING SIGNALS

- VxWorks generic and POSIX signal APIs
- Writing simple handlers
- Passing parameters
- Multiplexing signals through a single handler
- Masking and signal deferral

##### INTER-TASK COORDINATION AND COMMUNICATION

- Semaphores for synchronization and mutual exclusion
- Synchronization through the events API
- Message passing

##### INSTRUMENTING CODE BY PRINTING

- Advantages of print services
- Printing at interrupt time
- Graphical printing
- Event points and instrumenting dynamically

##### ACCESSING PHYSICAL MEMORY FROM A REAL-TIME PROCESS

- BSP modification requirements
- Mapping physical addresses to the RTP virtual address space
- Tools and techniques for examining the RTP virtual address space mapping

##### USING SHARED LIBRARIES FROM A REAL-TIME PROCESS

- Creating shared libraries using Workbench
- Creating file systems to support real-time processes and shared libraries
- Dynamically linking real-time process code to shared libraries

## PREREQUISITE COURSES

- VxWorks 6.x and Workbench Essentials

## RELATED COURSES

- VxWorks Build and Configuration Use Cases
- VxWorks Application Debugging Use Cases

## 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/](http://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](mailto: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](mailto:emea-training@windriver.com)

