

VXWORKS 6.X DEVICE DRIVERS

COURSE DESCRIPTION

The VxWorks® 6.x Device Drivers workshop provides engineers with an efficient way to acquire the skills necessary to develop device drivers using both legacy VxWorks and VxBus device driver models.

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

- Optimize the development of a new device driver from scratch
- Use coding conventions for ease of debugging and driver portability
- Utilize common techniques for driver development
- Write standard VxWorks I/O drivers
- Distinguish between legacy VxWorks and VxBus drivers and determine which driver model is appropriate for a particular application
- Design and integrate custom VxBus drivers
- Migrate proprietary and legacy drivers to VxBus

PRODUCTS SUPPORTED

- VxWorks 6.8
- Wind River® Workbench 3.2

COURSE FORMAT

- This four-day expert-led course consists of lectures and lab sessions.
- Attendees use VxWorks 6.8 and Wind River Workbench 3.2 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

- Developers with general experience writing device drivers for embedded hardware systems

Course title:	VxWorks 6.x Device Drivers
Duration:	Four days
Format:	Instructor-led lectures and hands-on lab sessions
Content:	Day 1: Introduction to VxWorks Device Drivers; Driver Design Guidelines Day 2: VxBus Integration; VxBus Initialization Day 3: VxWorks I/O Interface; VxWorks Serial Drivers; Polling and Interrupts Day 4: Using VxBus Drivers; Migration to VxBus; VxBus Class-Specific Drivers

- Engineers who will develop VxBus-enabled device drivers

PREREQUISITE SKILLS

- Three to five years OS/programming experience
- One year embedded device programming experience
- Familiarity with device drivers
- Basic understanding of reading and writing device registers

PREREQUISITE COURSES

- Real-Time Programming for Embedded Systems
- VxWorks 6.x and Workbench Essentials

RELATED COURSES AND MENTORING

- VxWorks 6.x Board Support Package
- VxWorks 6.x Symmetric Multiprocessing
- Workbench On-Chip Debugging Essentials for VxWorks

SYLLABUS

Day 1

INTRODUCTION TO VXWORKS DEVICE DRIVERS

- Overview
- VxWorks device driver models
- Introduction to VxBus
- VxBus terminology
- VxWorks target initialization
- VxWorks development environment
- **LAB: Getting started (booting, shells)**

DRIVER DESIGN GUIDELINES

- Design goals
- VxWorks coding conventions
- Control structures
- Error handling
- Driver documentation and other resources
- **LAB: Common driver interactions**

Day 2

VXBUS INTEGRATION

- Introduction
- Location of resources
- Required files
- Essential source file elements
- BSP configuration
- VxWorks component configuration
- **LAB: Integrating a VxBus driver**

VXBUS INITIALIZATION

- VxBus driver initialization sequence
- Other driver features
- VxBus show routines
- Services available to VxBus drivers
- **LAB: Initializing a VxBus driver**

Day 3

VXWORKS I/O INTERFACE

- Introduction
- Standard I/O

- Support routines
- Supporting select()
- I/O access from user space
- **LAB: VxWorks I/O interface**

VXWORKS SERIAL DRIVERS

- Overview
- ttyDrv
- Driver routines
- Initialization
- Supporting the WDB agent

POLLING AND INTERRUPTS

- Interrupt handling
- Polling
- Design considerations
- **LAB: Polling and interrupts**

Day 4

USING VXBUS DRIVERS

- Using methods
- Using a standard I/O model to integrate a VxBus driver into a VIP
- Dynamic loading/unloading
- Removing a device
- **LAB: Using VxBus**

MIGRATION TO VXBUS

- Generic migration strategy
- Porting OS-agnostic drivers to VxBus
- **LAB: Migrating a legacy LED driver to VxBus**

VXBUS CLASS-SPECIFIC DRIVERS

- Interrupt handling
- Interrupt controllers
- PLB and PCI buses
- VxBus-compliant serial drivers
- VxBus-compliant network drivers
- VxBus-compliant timer drivers

USE CASE: CUSTOM END DRIVER

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

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