EDUCATION SERVICES

VXWORKS 6.X BOARD SUPPORT PACKAGE

COURSE DESCRIPTION

The VxWorks® 6.x Board Support Package course provides engineers with a fast, cost-effective way to acquire the knowledge necessary to port VxWorks to customer hardware.

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

- Define a BSP development strategy
- Use a hardware bringup tool to initialize a board and download code
- Write and debug BSP initialization code
- Create a basic boot loader image
- Use Wind River® Workbench tools effectively to accelerate board bringup
- Integrate device drivers, including interrupt management, clock support, and timestamps
- Supply the required BSP routines to complete a BSP that complies with Wind River standards
- Migrate to a BSP with VxBus support
- Integrate a VxBus driver
- Achieve faster, more reliable program development
- Package and validate a BSP

Hands-on exercises are included, utilizing the Wind River Simics virtual target.

PRODUCTS SUPPORTED

- VxWorks 6.9
- Wind River Workbench 3.3

COURSE FORMAT

- This four-day expert-led course consists of lectures and lab sessions.
- Attendees use VxWorks 6.9, Workbench 3.3, and Simics to gain experience with the topics presented.
- Participants receive individual guidance from an expert engineer who has extensive experience with Wind River technologies.

Course title:	**VxWorks 6.x Board Support Package**
Duration:	Four days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Content:	**Day 1:** Introduction to VxWorks BSPs; Pre-kernel Initialization Sequence
	Day 2: Kernel Boot Sequence; Developing a Basic Boot Loader
	Day 3: Developing a Basic VxWorks Image; VxWorks Components
	Day 4: Device Driver Integration; Validation Test Suite

AUDIENCE

- Developers planning to port a BSP to a new board on a supported architecture
- Device driver writers
- Application programmers interested in learning what occurs at the hardware level of a VxWorks image
- Senior engineers who will decide on a final production image of their product

PREREQUISITE SKILLS

- C programming, including experience with structures, pointers, pointers to structures, typedefs, macros, and bitwise operators
- Functional knowledge of UNIX or Windows
- Experience using the Workbench Debugger to debug target code

PREREQUISITE COURSES

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

SYLLABUS

Day 1

INTRODUCTION TO VXWORKS BSPS

- BSP overview
- BSP development workflow
- VxWorks BSP development environment
- **LAB: Getting started**

PRE-KERNEL INITIALIZATION SEQUENCE

- romInit ()
- romStart ()
- usrInit ()
- sysHwInit ()
- Pre-kernel load and debug options
- **LAB: Pre-kernel initialization**

Day 2

KERNEL BOOT SEQUENCE

- kernelInit ()
- usrRoot ()
- sysHwInit2 ()
- BSP development cycle
- **LAB: Kernel initialization, code browsing**

DEVELOPING A BASIC BOOT LOADER

- Boot ROM overview
- VxWorks and boot loader image types
- Boot loader/BSP project
- Makefiles and build tools
- **LAB: BSP selection**

Day 3

DEVELOPING A BASIC VXWORKS IMAGE

- Differences from boot loader/BSP project
- VxWorks image project in Workbench
- vxprj
- PROFILE_BOOTAPP
- Kernel diagnostics
- Memory management
- **LAB: Developing a basic VxWorks image**

VXWORKS COMPONENTS

- Workbench kernel editor
- Component descriptor language
- 20bsp.cdf
- **LAB: VxWorks components**

Day 4

DEVICE DRIVER INTEGRATION

- Introduction to VxBus
- Statically configured VxBus devices
- Required device drivers
- Dynamically discovered VxBus devices
- Non-VxBus device drivers
- Drivers in a downloadable kernel module
- Driver considerations for RTPs

VALIDATION TEST SUITE

- BSP development cycle – test and document
- Framework overview
- VTS files
- Configuring and running tests
- Analyzing results
- **LAB: Validation test suite**

OPTIONAL MODULES

VXWORKS BSP FOR INTEL ® ARCHITECTURE

- IA vs. SoC
- BIOS, boot sequence, and processor modes
- IA interrupts
- Intel 64bit

VXWORKS BSP FOR SMP

- Requirements for SMP
- Optional BSP requirements

VXWORKS BSP FOR NATIVE AMP

- Multicore AMP requirements
- MIPC enablement
- smLib

VXWORKS BSP CONSIDERATIONS FOR REAL-TIME PROCESS SUPPORT

- RTP overview
- Overlapped memory

RELATED COURSES

- VxWorks 6.x Device Drivers

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