EDUCATION SERVICES

WIND RIVER HELIX VIRTUALIZATION PLATFORM ESSENTIALS FOR AIRBORNE

COURSE DESCRIPTION

The Wind River® Helix™ Virtualization Platform Essentials for Airborne course provides engineers with a fast, cost-effective way to acquire the skills necessary to develop safety-critical applications with Helix 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 Helix Platform real-time operating system (RTOS)
- Accelerate the development and configuration of ARINC 653 safety-critical systems
- Use Helix Platform–specific Wind River Workbench facilities to configure Helix Platform applications
- Build applications within partitions, and use ARINC ports for I/O from partitions
- Use core tools efficiently: debugger, Wind River System Viewer

PRODUCTS SUPPORTED

- Wind River Helix Virtualization Platform (version SR-0610)

COURSE FORMAT

- This four-day expert-led course consists of lectures and lab sessions.
- Attendees use Helix Platform 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 Helix Platform and VxWorks 7 partition operating system

Course title:	**Wind River Helix Virtualization Platform Essentials for Airborne**
Duration:	Four days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Content:	Getting Started with Helix Platform; Introduction to Virtualization; Helix Platform Hypervisor and Root OS; Partitions; Processes; Intra-partition Communication; Inter-partition Communication; Health and Error Management; System Architecture; Helix Platform Shared Memory; Multi-core in Safety-Critical Systems; VxWorks 7 Guest Source Level Debugging in Helix Platform; VxWorks 7 Guest System Viewer in Helix Platform

PREREQUISITE SKILLS

- One year of C or C++ programming experience

PREREQUISITE COURSES

- None

RELATED COURSES

- None

SYLLABUS

GETTING STARTED WITH HELIX PLATFORM

- Helix Platform overview
- ARINC 653 overview
- The specification
- System overview
- Creating a system
- Booting and connecting host and target
- XML editors
- Hands-on lab
- Key references
- **LAB: Getting Started with Helix Platform**
- **LAB: Developing a Helix Platform System**

INTRODUCTION TO VIRTUALIZATION

- What is virtualization?
- Benefits of virtualization
- Multi-core software configurations
- Hypervisor requirements for embedded devices

HELIX PLATFORM HYPERVISOR AND ROOT OS

- Architectural design
- The root OS
- Memory translations
- Virtual machines and devices
- Booting Helix Platform

PARTITIONS

- Partitions introduction
- Essentials
- Key references

PROCESSES

- Time in ARINC 653
- Introduction to processes
- Essentials
- Key references
- **LAB: Scheduling Helix Platform Processes**

INTRA-PARTITION COMMUNICATION

- Intra-partition communication introduction
- Essentials
- Hands-on lab
- Key references
- **LAB: Communication Within a Partition**

INTER-PARTITION COMMUNICATION

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

HEALTH AND ERROR MANAGEMENT

- Introduction to health monitoring
- 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

HELIX PLATFORM SHARED MEMORY

- Shared memory features
- Technical details
- System configuration
- Key references

MULTI-CORE IN SAFETY-CRITICAL SYSTEMS

- Helix Platform safety-critical multi-core support
- XML configuration
- Key references
- LAB: Creating a Multi-core Helix Platform System

VXWORKS 7 GUEST SOURCE DEBUGGING IN HELIX PLATFORM

- Source code debugger overview
- Configuration
- Debugging details

- Hands-on lab
- Key references
- **LAB: Debugging Guests**

VXWORKS 7 GUEST SYSTEM VIEWER IN HELIX PLATFORM

- Introduction
- Configuring System Viewer
- Instrumenting a VxWorks guest
- Using System Viewer
- Hands-on lab
- Key references
- **LAB: Using System Viewer**

OPTIONAL APPENDIXES

- Migration: VxWorks 653 3.0.1.1 versus Helix Platform SR0600
- Embedded RTOS overview
- Helix Platform certification
- Miscellaneous certification elements
- XML primer

GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of experience delivering software for intelligent systems, 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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WIND

Wind River is a global leader in delivering software for IoT. Its technology is found in more than 2 billion devices and is backed by world-class professional services and customer support. Wind River is accelerating digital transformation of critical infrastructure systems that demand the highest levels of safety, security, performance, and reliability.