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Zynq UltraScale+ MPSoC: Boot and Platform Management Spec Sheet

MPSOC-BOOT-PM (v1.0)

Course Specification

Course Description

This course provides software developers responsible for booting and platform management with an overview of the capabilities and support for the AMD Zynq™ UltraScale+™ MPSoC.

The emphasis is on:

- Reviewing the catalog of OS implementation options, including hypervisors and various Linux® implementations
- Booting and configuring a system
- Applying various power management techniques for the Zynq UltraScale+ MPSoC

What's New for 2025.2

- Added labs:
  - QEMU: Linux® Application Development and Debugging
  - FSBL Debugging
- All labs have been updated to the latest software versions

Level – Embedded Software 3

Course Details

- 2 days ILT or 16 hours On-Demand
  - 21 lectures
  - 8 labs
  - 3 demos

Course Part Number – MPSOC-BOOT-PM

Who Should Attend? – Software developers interested in understanding the boot process, including creating bootable images, FSBL topics, and the platform management unit (PMU).

Prerequisites

- General understanding of C coding
- Familiarity with issues related to booting a complex embedded system

Software Tools

- Vivado™ Design Suite 2025.2
- Vitis™ Unified IDE 2025.2
- Hardware emulation environment:
  - VirtualBox/CloudShare
  - QEMU
  - Ubuntu® desktop

Hardware

- Zynq UltraScale+ MPSoC ZCU104 board*
- Versal™ adaptive SoC VCK190 board*

* This course focuses on the Zynq UltraScale+ and Versal architectures. Check with your local Authorized Training Provider for the specifics of the in-class lab environment or other customizations.

After completing this comprehensive training, you will have the necessary skills to:

- Define the underlying implementation of the application processing unit (APU) and real-time processing unit (RPU) to make best use of their capabilities
- Explore the capabilities of the platform management unit (PMU)
- Create bootable images
- Manage hardware/software co-debugging

Course Outline

Day 1

- **Application Processing Unit**
  Introduction to the members of the APU, specifically the Arm® Cortex®-A53 processor and how the cluster is configured and managed. {Lecture}
- **Real-Time Processing Unit**
  Focuses on the real-time processing module (RPU) in the PS, which is comprised of a pair of Arm Cortex processors and supporting elements. {Lecture, Demo, Lab}
- **Power Management**
  Introduction to the concepts of power requirements in embedded systems and the Zynq UltraScale+ MPSoC. {Lectures, Lab}
- **QEMU**
  Introduction to the Quick Emulator, which is the tool used to run software for a device when hardware is not available. {Lectures, Demo, Labs}
- **PMU**
  Overview of the PMU and the power-saving features of the device. {Lectures}

Day 2

- **Adaptive SoC Booting**
  How to implement the embedded system, including the boot process and boot image creation. {Lectures, Labs}
- **FSBL**
  Demonstrates the process of developing, customizing, and debugging this mandatory piece of code. {Lectures, Demo, lab}
- **Debugging Using Cross-Triggering.**
  Illustrates how HW-SW cross-triggering techniques can uncover issues. {Lecture, Lab}

Register Today

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