Course Specification

Zynq UltraScale+ MPSoC for the Software Developer
Embedded Software 3

**Course Description**

This course provides software developers with an overview of the capabilities and support for the Zynq® UltraScale+™ MPSoC family from a software development perspective.

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 family

**Course Outline**

**Day 1**
- Zynq UltraScale+ MPSoC Application Processing Unit (Lecture, Lab)

**Day 2**
- Yocto (Lecture, Demo, Lab)
- Open Source Library (Linux) (Lecture, Demo, Lab)
- FreeRTOS (Lecture, Demo, Lab)
- Zynq UltraScale+ MPSoC Software Stack (Lecture, Demo)
- Zynq UltraScale+ MPSoC PMU (Lecture, Lab)
- Zynq UltraScale+ MPSoC Power Management (Lecture, Lab)
- Zynq UltraScale+ MPSoC Booting (Lecture, Lab)
- First Stage Boot Loader (Lecture, Demo)

**Level** – Embedded Software 3
**Course Duration** – 2 days
**Price** – $1600 or 16 Training Credits
**Course Part Number** – EMBD-ZUPSW

**Who Should Attend?** – Software developers interested in understanding the OS and other capabilities of the Zynq UltraScale+ MPSoC device.

**Prerequisites**
- General understanding of embedded and real-time operating systems
- Familiarity with issues related to implementing a complex embedded system

**Software Tools**
- Vivado® Design Suite 2018.3
  - May require special Zynq UltraScale+ MPSoC family license
- Hardware emulation environment:
  - VirtualBox
  - QEMU
  - Ubuntu desktop
  - PetaLinux

**Hardware**
- Host computer for running the above software*

*This course focuses on the Zynq UltraScale+ MPSoC architecture. Check with Hardent for the specifics of the in-class lab environment or other customizations. This version of the class does not use a physical board, but rather a local emulation environment and the Vivado Design Suite.

After completing this comprehensive training, you will have the necessary skills to:
- Distinguish between asymmetric multi-processing (AMP) and symmetric multi-processing (SMP) environments
- Identify situations when the ARM® TrustZone technology and/or a hypervisor should be used
- Effectively use power management strategies and leverage the capabilities of the platform management unit (PMU)
- Define the boot sequences appropriate to the needs of the system
- Define the underlying implementation of the application processing unit (APU) and real-time processing unit (RPU) to make best use of their capabilities

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EMBD-ZUPSW (v1.0H)  
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- Zynq UltraScale+ MPSoC Software Stack – Introduction to what a software stack is and a number of stacks used with the Zynq UltraScale+ MPSoC.
- Zynq UltraScale+ MPSoC PMU – Investigation into the tools and techniques for debugging a Zynq UltraScale+ MPSoC device.
- Zynq UltraScale+ MPSoC Power Management – Overview of the PMU and the power-saving features of the device.
- Zynq UltraScale+ MPSoC Booting – How to implement the embedded system, including the boot process and boot image creation. Also how to detect a failed boot.
- First Stage Boot Loader – Introduction to the FSBL, its importance, and how it can be implemented and debugged.

Register Today
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