

Course Description

This course provides an overview of the capabilities and support for the Zynq® UltraScale+™ MPSoC family.

What's New for 2020.1

- All labs have been ported to target the Zynq UltraScale+ MPSoC ZCU104 board
- Linux Application Development and Debugging lab: Support for debugging an application through tcf-agent added

Level – Embedded 3

Course Duration – 3 days

Price –

Course Part Number – EMBD-ZUPMPSoC

Who Should Attend? – System architects, hardware designers and software developers interested in understanding the capabilities and ecosystem of the Zynq UltraScale+ MPSoC device.

Prerequisites

- Suggested: Understanding of the Zynq-7000 architecture
- Familiarity with embedded operating systems

Software Tools

- Vivado® Design Suite 2020.1
 - May require special Zynq UltraScale+ MPSoC family license
- Hardware emulation environment:
 - VirtualBox
 - QEMU
 - Ubuntu desktop
 - PetaLinux

Hardware

- Zynq UltraScale+ MPSoC ZCU104 board

Course Outline

Day 1

- **Zynq UltraScale+ MPSoC Application Processing Unit**
 - Overview
 - Cortex A-53 Processor
 - Architecture Extensions
 - 64-bit architecture features
 - Exception handling
 - Cache coherency
- **Zynq UltraScale+MPSoC Real-Time Processing Unit**
 - Introduction
 - L1 and L2 Caches
 - Clocking, Power and Reset
 - TCM Architecture
 - TCM Software
- **AXI**
 - Introduction
 - Variations
 - Transactions
- **Zynq Ultrascale+ MPSoC System Protection**
 - System Memory Management Unit
 - Peripheral Protection Unit
 - Memory Protection Unit

- **Zynq UltraScale+ MPSoC Clocks and Resets**
 - Clocking
 - PS Resets
- **Zynq UltraScale+ MPSoC PMU**
 - Introduction
 - Hardware Architecture
 - PMU and the IPI
 - Zynq UltraScale+ MPSoC PMU
- **Zynq UltraScale+ MPSoC Booting**
 - Boot and Configuration
 - Boot Image
 - First Stage Boot Loader (FSBL)

Day 2

- **ARM TrustZone Technology**
 - Overview
 - TrustZone Firmware
 - TrustZone Hardware
- **QEMU**
 - Introduction
 - Launching
 - Bare-Metal Application Development and Debugging
 - Linux Application Development and Debugging
- **Zynq UltraScale+ MPSoC HW-SW Virtualization**
 - Hypervisors: Introduction
 - Virtualization Hardware Support
- **Multiprocessor Software Architecture**
- **Hypervisors**
 - Introduction
 - Architecture
 - Configuration and Use
- **OpenAMP**
 - Overview
 - Framework
 - Using OpenAMP
- **Linux**
 - Components
 - SMP: Introduction
 - SMP: Configuration and Boot

Day 3

- **Yocto**
 - Overview
 - Build Workflow
 - Relationship with PetaLinux
- **Open Source Library (Linux)**
 - Configuring and Building Linux
 - PetaLinux and OSL Comparison

- **FreeRTOS**
 - Introduction
 - Internals Implementation
- **Zynq UltraScale+ MPSoC Software Stack**
 - Introduction
 - Software Stack
- **Zynq UltraScale+ MPSoC PMU**
 - PMU Debugging
 - PMU Application Development
 - PMU API
 - PMUSystem Architecture
- **Zynq UltraScale+ MPSoC Power Management**
 - Overview
 - Power Domains
- **Zynq UltraScale+ Booting**
 - Detecting a Failed Boot
- **First Stage Boot Loader**
 - Introduction and Debugging

Register Today

Visit [Faster Technology](#) to view schedules and register online or contact Debbie Cohen at (713) 440-8242. .