Abstract

Today, FPGA-based Hardware/Software Co-design applications are frequently used in many areas such as high performance computing, video processing, automation, automotive, and communications. Since there is not any standardized operating system used for FPGA applications, it is usually required to start developing from scratch for both software and hardware. Although this need is met partly by the Reconfigurable Operating System studies, it has not been reached yet to the level of performance of bare-metal applications. In this article, the design and implementation of the memory interface, which was developed for high performance data transfer between software and hardware in reconfigurable operating systems, was described. The memory interface (StreamIF), which was developed as open source, was verified with the ReconOS operating system in "Xilinx Zedboard Zynq-7000 SoC Development Board".

Index Terms

Computer Science
Operating Systems
Keywords

FPGA, Memory Interface, Zynq-7000, AXI Stream, AXI DMA