DESIGN A 1G MANAGED ETHERNET SWITCH IP CORE FOR XILINX SOC DEVICES.

Context

Ethernet interfaces are widely used in embedded systems for sharing real-time information between devices. Ethernet is compelling for embedded systems due to its ubiquitous, interoperability and scalability. One of important characteristics in embedded world is the real time delivery of data packets and its latency. The most suitable principle should be investigated and implemented as demonstrator.

Assignment

The assignment starts with a study about the best suitable principle for implementing an 1G managed ethernet switch onto FPGAs. It should support the standards like IEEE 802.3, but also the optional features like IEEE 1588 Transparent clock, Jumbo frames, VLAN tagging and filtering. Investigate also how the real time and security aspects can be considered.

Based on the study results, a demonstrator needs to be created. This demonstrator will be based on the ZCU104 evaluation kit of Xilinx. The show case is a setup with 2 nodes and having real time communication between each other.

Internship overview

- Bachelor
- Graduation assignment
- Electrical engineering
- Location: Eindhoven

Technologies

- Ethernet for embedded systems.
- Full-crossbar non blocking interconnect matrix.
- FPGA, VHDL

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Sioux Technologies
Eindhoven | Mijdrecht | Delft | Apeldoorn

+31 (0)40 2677 100
jobs@sioux.eu
jobs.sioux.eu

Typical applications are:

- High-end printer for offset market, where each module has its own mode
- Camera and Video applications
- Next generation digital workflow for surgery.

Activities

- Research of Management Ethernet Switch in embedded applications.
- Research how to secure the real time aspects in Ethernet.
- Create an implementation in VHDL based on the ZCU104 Board.

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- Working on innovative technology
- Challenging, dynamic and varied work
- A comfortable and personal work environment
- Plenty of opportunities for personal development
- Great carreer opportunities
- Contributing to a safe, healthy and sustainable society

Get in touch!
Would you like to know more about this student assignment?

Contact:
Hans Spitshuis / Johan van Iersel
+31 (0)40 - 2677 100
jobs@sioux.eu