Wireshark Hardware Packet Capture Student Assignment

AimValley is a world class engineering and innovation center that designs and builds networking solutions. We are based in Hilversum, with a strong presence in the USA and India. We started in 2003 as a spin-off from Lucent Technologies (a successor from the American company AT&T), that is why we have a strong background in telecommunication solutions and have build-up vast expertise in real-time processor techniques. Most of our design & development is done in-house.

Product development entails preparation of requirement documents, specification of system architecture, electronic development (block diagrams, board design, system certification, mechanical design), FPGA/ASIC development, software development, system verification and product/factory introduction. AimValley makes use of FPGAs to process high speed transmission functions. Real-time requirements are also key in our software development.

Our business is about people and our teams are dynamic, skilled and passionate about technique. Recruiting and training the right talent is an essential part of the AimValley DNA. We have over 80 employees of which 75% works as design expert in the R&D organization. All R&D employees have a college or university level education.

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Project Introduction - Wireshark Hardware Packet Capture

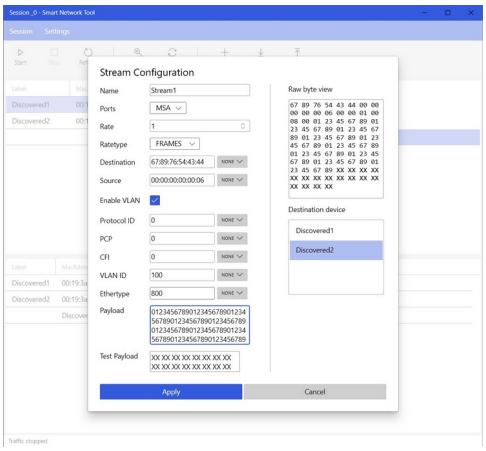
AimValley has developed a Smart Networking Tool (SNT) that allows the user to send and receive custom defined packets on an SFP. The SNT comes with a python backend server that maintains the communication with the SFP's and a graphical user interface. The application can manage more that one device and provides many ways to tested and verify Ethernet based networks.
This student assignment entails an extension of the current features with the possibility to capture packets that match a specific filter.

Project Description

For an earlier assignment the capture, filter and report function was developed. This design needs to be migrated and adapted for the use in the SNT.
Currently there is little to no room in the SNT and this needs to be resolved first.
Additionally the current design of the SNT needs to be extended to make use of HyperRAM or HyperFLASH, ensuring a larger storage area for the trapped packets.
Instead of developing a proprietary file and packet inspection extension to the SNT application, we want to use the filter and the packet inspection capabilities of Wireshark.
The assignment requires the student to investigate and come-up with an architecture how to integrate Wireshark and the SNT on firmware level (HLS/FPGA), interface and application level.

Complexity

- Migrate and adapt the HLS firmware to the SNT platform.
- Extend the HLS based firmware to use HyperRAM/FLASH as Ethernet packet storage.
- Devise a way to integrate Wireshark into the SNT Tool. This requires investigation of the Wireshark filter structure, interface capabilities of Wireshark and SNT, and the trapped packet format.



Keywords for this project

- FPGA
- Xilinx tool chain
- Python, Visual Studio
- HyperRAM/FLASH

Affinity

- Networking
- Embedded
- Wireshark

Skills

- Communicative
- Independent
- Competent in English Language

Are you a student with a can-do attitude and a passion for technology?
AimValley is your company!

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