



AimValley is a world-class engineering and innovation center that designs and builds networking solutions. We are based in Hilversum, with colleagues in Canada, India and France. We started in 2003 as a spin-off from Lucent Technologies (a successor from the American company AT&T), which is why we have a strong background in telecommunication solutions and have built-up a vast expertise in real-time processor technology. Our telecom experience creates a perfect crossover to the HealthTech sector, where we are establishing our footprint, through developing innovative connectivity solutions for medical device manufacturers. Most of our design & development is done in-house.

Product development entails the preparation of requirements documents, specifications of system architecture, electronic development (board design, system certification, mechanical design), FPGA/ASIC & software development, system verification, and product/factory introduction. AimValley uses FPGAs to process high-speed transmission functions. Real-time requirements are key in our software development.

Our business is about people and our teams are dynamic, skilled and passionate about technology. Recruiting and training the right talent is an essential part of the AimValley DNA. We have over 95 employees of which 75% work as a design expert in the R&D organization. All R&D employees have a college or university-level education.



Project Introduction - Virtualization of Simulated Targets

AimValley's embedded systems are deployed all over the world and are designed to work for many years without problems. The basis for a very low mean time between failures is a strong development process and an architecture that supports that goal. Traditionally unit tests, integration test and verification test are part of this process to ensure that the system works as designed.

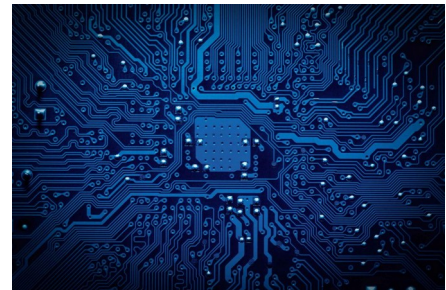
The AimOS development environment supports a simulation environment that is used during implementation, testing and bug resolution. Currently the simulation environment runs on a standard Debian desktop environment in a rootless docker container and is setup to mimic the target environment as close as possible. The next step in mimicking the target environment is to run the simulation on a virtualized target environment on the desktop.

Project Description

This assignment investigates a possible setup of a virtualized target environment on a Debian desktop that supports the current simulation environment and at the same time emulates the target environment as close as possible. If the investigation shows that it is possible, then a prototype of the environment is to be build and setup.

The virtualized target environment needs to:

- > Run on a Debian Host.
- > Support the simulation environment (incl tooling)
- > Mimic a variety of target CPU's as much as possible (32bit/64bit)
- > Mimic a variety target OS'es as much as possible
- > Investigate virtualization from inside a rootless docker container



Complexity

- > The AimOS simulation environment needs to be investigated and understood thoroughly before the student can determine how to virtualize a target environment.
- > Virtualization inside a rootless docker container requires some investigation and deeper understanding of docker containers and the virtualization software.

Keywords for this project

- > Embedded Ssystems, Linux
- > Docker, C/C++
- > Python, Qemu

Affinity

- > KVM
- > Hypervisors
- > Makepp

Skills

- > Independent
- > Competent in English
- > Inquisitive

Are you a student with a can-do attitude and a passion for technology?

AimValley is your company!

Why not join us today: students@aimvalley.com