



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.



### Project Introduction - gRPC for AimOS

AimValley has developed in-house an Ethernet stack called AimOS (AimValley Operations System) to manage/configure their Ethernet switching solutions. The AimOS Ethernet is primarily a configuration management solution for embedded systems with support for Ethernet L2/L3 switching. Recently we added a webUI and a REST-API interface to the existing management agents. For large deployments where many AimOS systems are managed by a remote server, a REST-API interface can become a performance bottleneck. The architecture of AimOS supports various management agents, like a webUI, REST-API, CLI, etc. that coexist next to each other. The Student assignment entails the development of yet another management agent based up on gRPC.

### Project Description

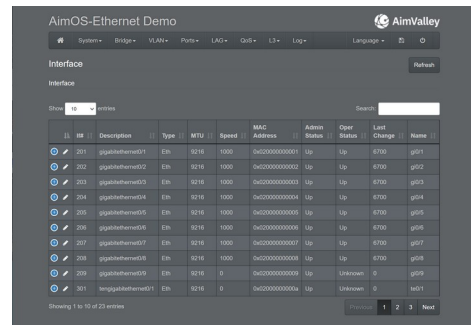
The assignment requires an investigation of the current AimOS management framework and a design of a highly efficient gRPC agent that requires little to no manual coding.

- > Efficiency/performance means that the gRPC requests and replies out perform all the other AimOS management agents that are supported today.
  - > No manual coding means that the agent needs to adaptable to new configuration parameters / features without manual coding. Or at least as little as possible
- Requested is an architecture/design and prototype of the management agent.

### Complexity

The current management framework allows for concurrent access of the system by any of the supported management agent. The primary reason to add the gRPC agent is performance and concurrent access might not be compatible with that goal. In order to reach that goal of maximum efficiency it could mean that the Student needs to dive a little deeper into the AimOS architecture and integrate the use of the protocol buffers at a lower level.

The second requirement, no manual encoding requires the Student to devise a way to generate the gRPC management agent rather than “just” write the code.



ID	Description	Type	MTU	Speed	MAC Address	Admin Status	Oper Status	Last Change	Name
201	gigabitethernet1	Eth	9216	1000	0xc20000000001	Up	Up	0:00	g101
202	gigabitethernet2	Eth	9216	1000	0xc20000000002	Up	Up	0:00	g102
203	gigabitethernet3	Eth	9216	1000	0xc20000000003	Up	Up	0:00	g103
204	gigabitethernet4	Eth	9216	1000	0xc20000000004	Up	Up	0:00	g104
205	gigabitethernet5	Eth	9216	1000	0xc20000000005	Up	Up	0:00	g105
206	gigabitethernet6	Eth	9216	1000	0xc20000000006	Up	Up	0:00	g106
207	gigabitethernet7	Eth	9216	1000	0xc20000000007	Up	Up	0:00	g107
208	gigabitethernet8	Eth	9216	1000	0xc20000000008	Up	Up	0:00	g108
209	gigabitethernet9	Eth	9216	0	0xc20000000009	Unknown	Down	0	g109
201	ten-gigabitethernet1	Eth	9216	0	0xc2000000000a	Unknown	Down	0	ten1

#### Keywords for this project

- > Embedded Linux,
- > Jenkins, gRPC, protobuf
- > Docker, Git, Gerrit

#### Affinity

- > Embedded Software
- > Python, C/C++
- > Test Automation

#### Skills

- > Communicative
- > Independent
- > Competent in English

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

**Why not join us today: [working@aimvalley.com](mailto:working@aimvalley.com)**