Educational travel Prague

# Visit CESNET

The visit consisted of a single information dense lecture session. The lecture covered the history, domain and implementation at CESNET. The lecturer was a very pleasant and knowledgeable person with a lot of experience. The lecture was well structured and given in a complementary space.

We arrived at huge and modern building. It accurately represents the work they are doing. CESNET is telecom provider for the Czech research network. Their first and main mission is connecting the different research instances in the Czech Republic with each other. In achieving this at an incredibly early time they have a rich history.

When they described the very first infrastructure they made, it gave me a better understanding of the context of x25 and the early IP/TCP stack. It also showed us how far we came from then until now: 9.5 Kbit/s to 400 Gbit/s per channel is a tremendous improvement.

Afterwards they gave us an overview of where the physical cables were placed. Here I noticed that the places where most lines were going were also very populous. They were using dark fibres running at impressive speeds, with multiplexing on the different wavelengths. They also showed us what speeds they can/will offer to users with the given core network.

At the link layer they did not tell us about a lot except that they don’t use MPLS anymore but rather srV6. As far as I understood it, it is a further improvement of MPLS. It (ab)uses the large address space and header stacking feature of ipv6 to achieve per hop behaviour at an application specific level. The protocol is so new it is, that CESNET were the first to implement it.

Next on was the security for the network. They explained a few diverse ways a network could and was exploited and what measures they use to prevent it. The explanations where clear and concise, here in a lot of details is lost, but it would be outside the scope of the lecture anyway. It was a lot of security they needed at all the layers of the IP/TCP stack. It was then followed by real data of blocked attacks. Interesting to notice here was that the attacks were originating mostly from Russia, directly and indirectly.

Everything up to here was mostly followable. Everything that mentioned could be tied back to the theory we saw. Seeing it being used in the real world was very satisfying to me. We also got a glimpse of the further development of protocols we already learned and what real life problem they solved.

Having said that, the last part was hard to follow. It was more focused on the application layer which we hardly discuss. The general services like data storage, computing etc. Were easy enough to follow. But the distinct types of storage, or central <-> distributed storage where all too complicated to get with such little time. The one part I absolutely got nothing from was the authentication. It is a problem we have yet hardly seen. I don’t want to say it is uninteresting, but difficult to learn something from.

CESNET being a research network, they could also research new protocols and technologies in a production environment. This is most clear to see by the srV6 deployment, which they are the first adopters of. It also gives us an insight of the large data requirements research institutions need.

Overall, the visit was very pleasant, informational and very gratifying. It is a privilege to get such a great lecture from such a knowledgeable and experienced person. They gave us great insights and a good overview of what it takes to supply a nation-wide network.

The things I might want to see improved are:

* More explanation of the L3/L2 infrastructure at the cost of the applications they provide.
* Making it worth to go physically: there was nothing about the visit that couldn’t be done via a Zoom call. Visiting a node’s switching room to get an extra sense of scale would be great.

# Interview international company

The company I interviewed is EastVantage, an International Software solution company that is located in countries such as India and the Philippines but has some Belgian roots. I managed to get in correspondence with Managing Director Joeri Timp. I formulated their answers in the following report

## Report

### Career Opportunities

Software engineers at EastVantage can expect to work on diverse projects, including:

**Client Projects**: Engineers may join teams dedicated to specific clients such as Solutions 30 Europe, focusing on roadmap items, quality assurance, project management, and capacity planning for various sprints.

**Internal Projects**: Opportunities exist to contribute to EastVantage’s own software and the implementation of Odoo to streamline and digitize internal processes.

**Business Unit for Software Development**: Collaborating with subject matter experts, engineers can help refine the organization’s approach to offering software development services, including language development, collaboration tools, and integration of RPA and AI solutions.

### Internships and Part-Time Roles For students

internships and part-time roles are likely to involve working on internal projects or the business unit for software development. Tasks may include researching, creating shortlists of potential providers or tools, and contributing to the development of internal career paths for developers.

### Growth Opportunities

EastVantage promotes career advancement through its ‘4 P’s’ career ladder:

**Performance:** Becoming a more efficient developer within one’s field.

**Product:** Gaining expertise in a specific stack and mentoring junior developers.

**Process/Project:** Mastering collaboration techniques, both internally and with clients, and understanding which project management methods best suit a given assignment.

**People:** Taking on team leadership responsibilities, ensuring deliverables, and maintaining close client relationships to ensure satisfaction and timely adjustments.