Advanced Networking
Sample of a Written Exam

Instructions:

The exercise is broad and generic, the goal is to test you maturity and understanding of networking. There is no single "correct" solution, there are many different ways of solving it, some may be brighter than others, and some may be wrong, in the sense that lead to a network that will not work. The time you have (90 min.) is limited, thus you have to select the more important things to design and discuss and leave behind others.

Exercise

A company with approximately 2500 employees has built a new campus with four buildings, one for the management and administration, one for R&D and two for production. Do the high-level, logical design (topology, routing, address assignment, back-end services, protocols adopted, link and device dimensioning, ...) of the company network having the following additional information and constraints.

- Each employee has a PC and a VoIP terminal.
- The four buildings are approximately of the same size and are fully equipped with Cat.6 Ethernet cabling; inter-building connections are done with a pair of optical fibers.
- All employees have full access to the Internet, and both R&D and production (it is a Software Engineering company) make a heavy use of the network.
- The company servers must be reachable from the Internet and must be properly protected.