How to Teach Computer Networks Using Simulation Software

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Abstract
The increasing complexity of modern telecommunication systems causes difficulties in both teaching and learning computer networks. Students have to learn theories and specifications of different technologies but also need to practise configurations of specialized routers, switches and wireless access point which are not common devices. Usually such equipment is accessible only during classes and laboratory activities, thus students can use it in limited period of time. Network simulation software can resolve this problem.

Nowadays, there are many different network simulation programs such as CNET (CNET), INET Framework (INET) or GNS3 (GNS3) which can be useful for learning computer networks. However, one of the most universal one is Cisco Packet Tracer, which is advanced tool for simulation and visualization of different aspects of computer networks.

The main idea and good practice examples of teaching computer networks using simulation software will be presented from the perspective of Cisco Networking Academy instructor with ten years experience. The different network topologies which are typically discussed during the courses will be simulated and analysed. The basic configuration of network devices such as router or switch will be shown and explained. The virtual laboratories, typical troubleshooting tasks and student’s works from CCNA Exploration courses will be also presented.

Keywords
computer networks, simulation software, teaching

Biography
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