

Security Labs for Software Defined Networks in CloudLab

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Software-Defined Networking (SDN) has been changing inflexible networks in software-based programmable networks for more flexibility, scalability, and visibility into networking. At the same time, it brings many new security challenges, but there are very few educational materials for students in learning about SDN security. In this workshop, we present our newly designed SDN security education materials, which can be used to meet the ever-increasing demand for high-quality cybersecurity professionals with expertise in SDN security. For effective hands-on learning, the security labs are designed in CloudLab, a free open cloud platform supported by NSF. Participants receive handouts describing security problems, lab instructions, techniques to use CloudLab, and worksheets for Q&A, which can be directly used for their networking classes at their home institutions. The workshop proceeds in three sessions in which we: present the way to use CloudLab and to understand SDN; practice in simulating three networking attacks in SDN on CloudLab; and discussion and critique in small groups for new SDN security labs.

Keywords: Software-Defined Networking (SDN); Security; CloudLab