

BACKGROUND

- Industrial control systems see increased application in industry and in research projects
- Provide students with a better hands-on understanding of the behavior of industrial control systems.
- Develop labs that place bound students can do remotely

VALUE PROPOSITION

Due to factors that can't be overcome, some students may not be able to do experiments in the laboratory themselves, and self-purchasing industrial control systems equipment is too expensive. Therefore, our ideal solution is to develop experiments that students can perform through remote access or computer simulation.

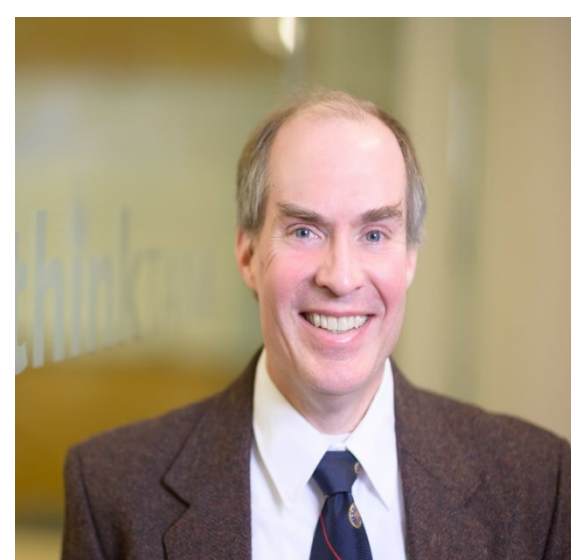
OBJECTIVE

Create and implement remote labs related to ECE 444/544 and write the instructions for TA and a copy for students. Provide suggestions on remote access tools

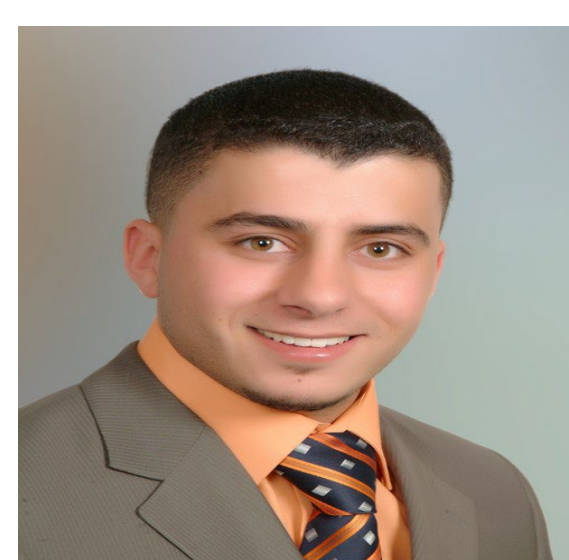
REQUIREMENT

- Remote-control desktop software
- SEL equipment (849, 421, RTAC, etc.) accessible over network
- The computer in the engineering laboratory (with SEL AcSELERator RTAC, KoCos ARTES 460 test set, and other software, and can be connected to the Raspberry Pi)

ACKNOWLEDGEMENT



Sponsor
Dr. Brian K. Johnson



Mentor
Abdallah Smadi

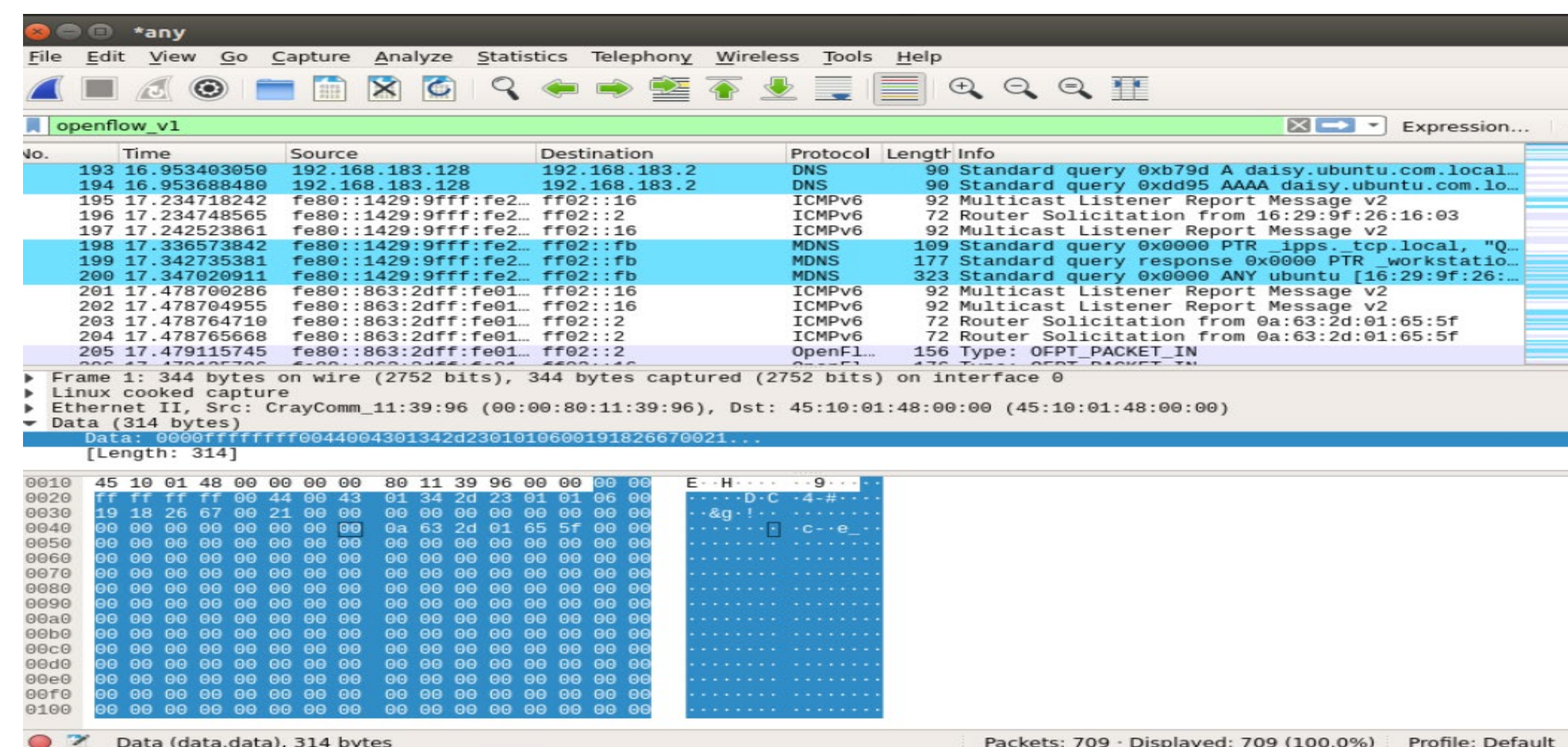
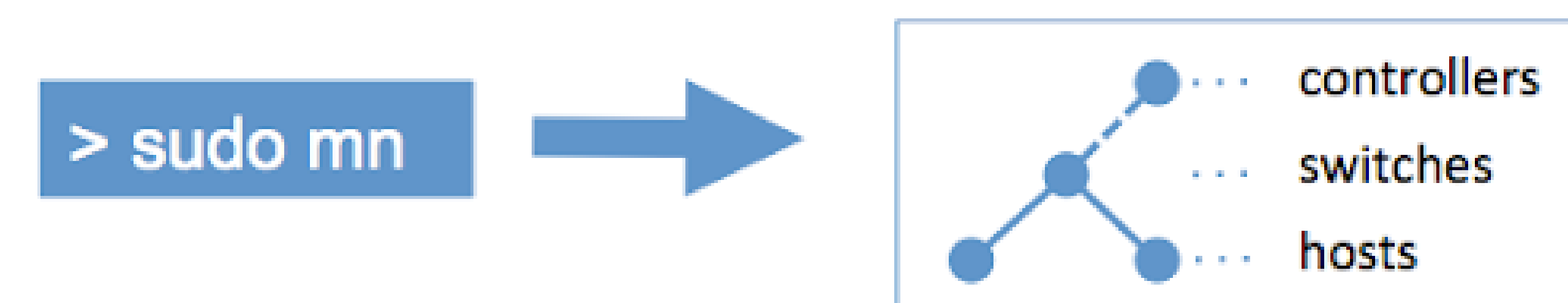


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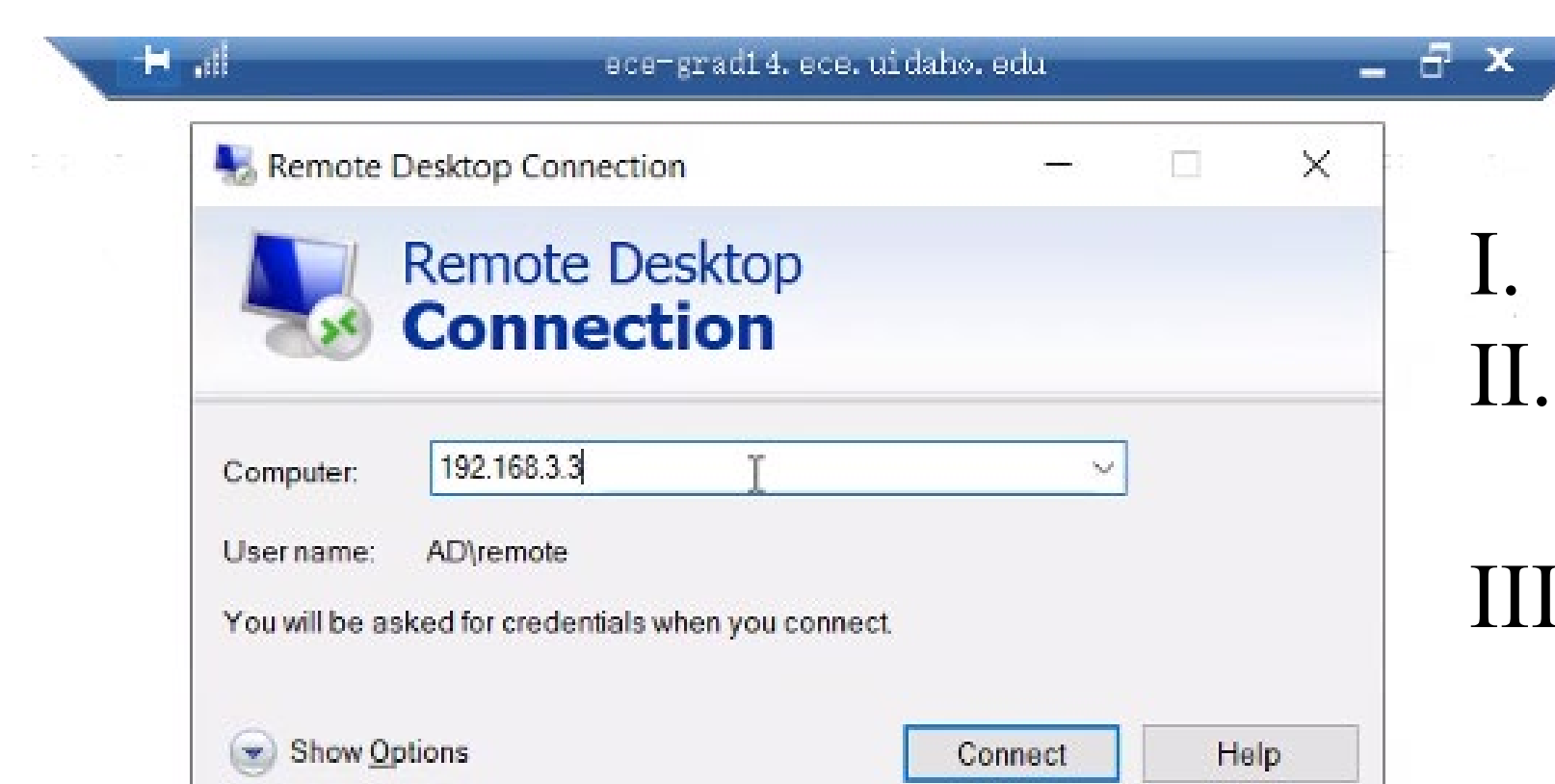
Project Development

- Learning of ECE 444/544 lab materials and lab materials from prior team
- Develop basic understanding of network simulation and determine which are suited to remote access and which to network emulation
- Choose appropriate software to accomplish tasks

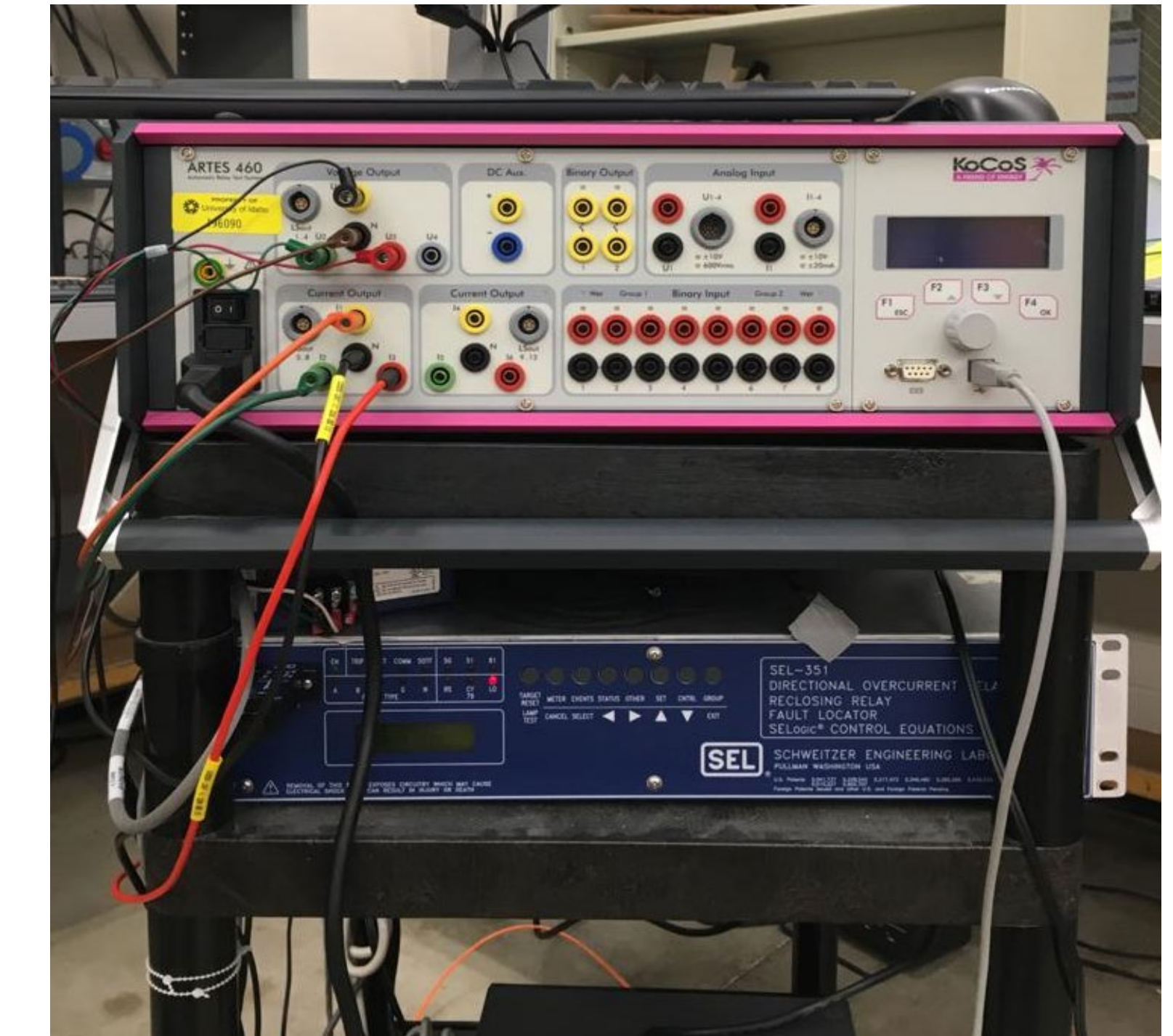
NETWORK EMULATION



REMOTE ACCESS



- Connect to Uidaho VPN
- Logon to destination computer
- Run remote desktop on the SCADA lab computer



Challenges

- We don't have a comprehensive understanding of the ECE444/544 course.
- For the experiments designed by previous team, the available images can't provide us with sufficient information, especially the connection of the equipment.
- Due to time zone difference, a lot of time was spent on communication and connections unnecessarily.

Risk management

Compared to the software like TeamViewer and Any desk, remote-control desktop is much safer. But it is better to check if the virus protection, VPN and firewall are running.