Failover and course integration
Workshop outcomes

- Planned Lab
  - Goal of lab
  - Original Sources
  - Plan/Next Steps

- Potential UJ Course utilization
  - CS325 – Networking – Every Spring
  - CS365 – Intro to Info Systems – Fall Even Years
  - CS490 – Advanced Info Systems – Spring Odd Years
    - Introducing as a Special Topics course, more applied cyber security concepts.
• Goal of this lab is to construct a tiered, somewhat repetative approach.

• Emphasize the concept of failover and redundancy in network design
  - Utilize Geni to build a basic network design with redundant links
  - Use OpenFlow groups to configure those links
  - Perform analysis of network performance with both links up, a failed link, and if possible, a “failing” device to work on troubleshooting network errors.
  
  • Is it possible to identify the difference between physical network issues and evidence of a “compromise” in this config?

Planned Lab – OpenFlow - Failover
• Sources:
  - [How to work with Fast-Failover OpenFlow groups](#)  
    - Seems to be the original source of the lab
  - [Geni Regional Workshop May 2018 files](#)  
    - Seems to be presentations, one of which being a [better formatted writeup](#) of the lab above.
  - [2016 slides](#) from the original Clemson/Geni authors on the lab somewhat better explaining the concepts

**FAST-FAILOVER Group**

- Use a single bucket for all packets
- Watch port/group as parameters
  - Determines “liveness” of bucket
  - If port/group is up, bucket can be used
  - If port/group is down, bucket cannot be used

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**Planned Lab – OpenFlow - Failover**
• Solid original rspec
  - While dated, existing config seemed to work right

• Solid instructions provided
  - Would not give to intro networking students
• Rspec was clearly developed a while ago
  - Taking one machine and upgrading from Ubuntu 14.04 to 16.xx to 18.04 was a failure. SSH died sometime during the full version upgrade and was unable to recover

• Likely going to be a bit too much for entry level networking and needs more security aspects added to be a CyberSec lab
  - Snapshot based or script creation?

Planned Lab – Bad things about original lab
Potential UJ Course utilization

- **CS325 – Networking – Every Spring**
  - **IP Routing Exersize**
  - OpenFlow Intro
  - OpenFlow Failover (Intro version)

- **CS365 – Intro to Info Systems – Fall Even Years**
  - Certificate Lab (Easy)
  - **DoS Traffic**
  - **Intrusion Detection (Basic)**
  - **Password CTF**

- **CS490 – Advanced Info Systems – Spring Odd Years**
  - OpenFlow (Advanced Infosec version)
  - **Pen Testing Labs**
  - **Intrusion Detection Systems (Hard)**

- **Introducing as a Special Topics course, more applied cyber security concepts.**
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Contact with any questions!