

CYSE 368
Cybersecurity Internship - Fall 2022
Reflection Paper 1
August 27, 2022 through September 21, 2022

During this time period, my primary focus was the “migration” of five network switches into the ODU Cisco SDA fabric. This migration was part of the ongoing conversion of ODU’s entire network to SDA, a project initiated and managed by the ODU Project Management Office (PMO). I was supervised by Senior Network Engineer Seth McFarland, who is the lead point of contact (POC) for ITS Networking. Seth developed the procedure document outlining the steps required to conduct a migration. Additionally, Aaron Olah, Network Automation Engineer, contributed to the overall migration effort by developing and maintaining Python scripts which assist in automating certain parts of the process.

Broadly speaking, SDA differs from traditional packet switching in two key areas: the conceptualization of the network as a “black box” with (essentially) identical configurations on user-facing “edge” nodes; and the ability to segment the network into secure partitions in order to reduce the attack surface introduced by the increasing use of IoT devices and BYOD/WFH employees.

The migration consisted of three phases: Pre-migration, Migration, and Post-Migration. The switches were located in two of the campus parking garages along Hampton Boulevard. These switches were chosen for me by Seth because there would be minimal impact to the overall network should something go wrong.

Pre-migration achieves three main goals: gathering information about the switches themselves and the devices connected to them; informing device stakeholders of upcoming changes to the network which will cause service disruptions; and preparing DNAC to incorporate the migrated switches into the network fabric.

The migration process is largely automated by Cisco DNAC itself, with assistance from some custom scripts tailored for requirements specific to our network. There were fiber-optic uplink cables that had to be moved from one port to another at two specific locations.

Post-migration is mostly about making sure everything works as it should. Certain devices which require static IP reservations need their reservations (and possibly DNS records) amended. Automated monitoring systems are updated with new information. Once everything is confirmed to be in working order, the stakeholders are notified.

Pre- and post-migration steps are usually conducted during normal business hours. Migrations, however, are usually scheduled for very early in the morning, since there is guaranteed to be network disruption, which has an impact on stakeholder productivity. In fact, ODU has a standing practice of conducting migrations such as these during a window beginning Sunday mornings at 6:00 A.M..