

Dynamic Resource Generation for Active Cyber Defense

Overview

This Senior Design Project (SDP) deals with the dynamic generation of decoy resources for active cyber defense.

Background

Key to identifying and defending against adversary cyber-attacks is the generation of “decoy” resources. The generation and deploying of these resources enable the deflection of attacker efforts, while also wasting attacker resources and (potentially) capturing information with regards to attacker attribution and intent.

Examples of these resources can include but are not limited to:

- Virtual machines
- Servers
- Active directories

Because it is difficult to anticipate an attacker’s intent ahead of an attempted intrusion, it is therefore important that these decoy resources are dynamic: some can be pre-curated and placed in a “on-the-shelf” mode, while others need to be able to be generated on-demand (in near-real-time) as an attack unfolds.

For additional reading on this topic, please see [this Forbes article](#) from 2018.

The Project

The project objectives will be divided by semester. For the first semester, students will design server decoys for dynamic deployment in response to a cyber-attack. Considerations will include:

- The type of decoy servers that would be relevant
- Evaluate cost for having resources on standby
- Architect mechanism to generate resources, both on-the-shelf and on-demand

During the subsequent semester, students will develop prototypes of semi-automated mechanisms for deploying these resources (“hand-off” for resources from staging to production), as well as create a test environment to simulate attack scenarios and corresponding decoy generation.

Throughout the project, students will have the opportunity to collaborate with AnaVation experts. Additionally, AnaVation will schedule opportunities for students to brief Subject Matter Experts (SMEs). At the end of the project, students will present their work to a panel comprised of AnaVation personnel, SMEs, and (pending availability) government stakeholders.

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