Thesis Project Portfolio

Dynamic Network Simulation Methodology

(Technical Report)

Network Defense Methods Effect on Social Trust

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Hackers are constantly advancing their methods, and so network defense methods must constantly advance in turn to maintain their advantage. Adaptive Moving Target Defense (AMTD) is a defense method that builds off of Moving Target Defense (MTD) by shifting the network configuration in response to attacks in addition to shifting on a regular schedule. While from a technical standpoint this technology is entirely a positive development, by integrating it into applications it becomes a part of the human society that interacts with the application. As such, it is important to consider the potential side effects the development of AMTD could have on society as a whole, especially if it were to become a more common defense method. In this project Actor Network Theory (ANT) is used, where technology applies restrictions onto actors according to the purpose the were created for, affecting the actions actors can take in the overall network with locks as an example where they restrict access to the key owners. ANT is used to analyze the relationships between actors so as to see what effects AMTD has on its users or on the applications it connects with, and what second order effects those interactions have on the broader environment. I used surveys to gather data on the level of knowledge of network defense methods UVA students have, as well as the level of trust they hold in those network defense methods. My expectations were that there would be a positive correlation between the two factors, that having increased knowledge of network defense methods would be linked with increased trust. The actual results showed that there was no correlation between the two factors, that the level of knowledge UVA students had of network defense methods was unrelated to the level of trust they had in said network defenses. This suggests that developing AMTD further will not have a negative impact on social trust, but it will likewise not have a positive impact. Therefore, given the positive technical effects that AMTD has, it would support the further development of the technology.