



Computer Network Security

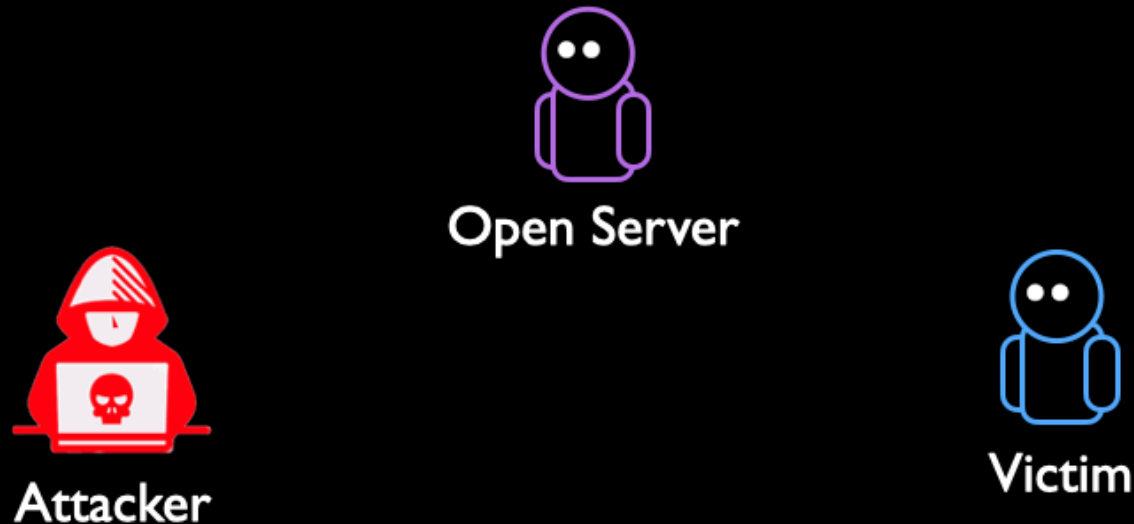
COMP 178 | Spring 2022 | University of the Pacific | Jeff Shafer

Bonus Topic: Weaponizing Middleboxes for TCP Reflected Amplification

Weaponizing Middleboxes

- **Weaponizing Middleboxes for TCP Reflected Amplification** by Kevin Bock et. al.
- Appeared in USENIX Security '21 (August 2021)
 - Winner of Distinguished Paper Award!
 - Winner of Internet Defense Prize!
- <https://www.usenix.org/conference/usenixsecurity21/presentation/bock>
- <https://geneva.cs.umd.edu/posts/usenix21-weaponizing-censors/>

Reflected amplification attacks

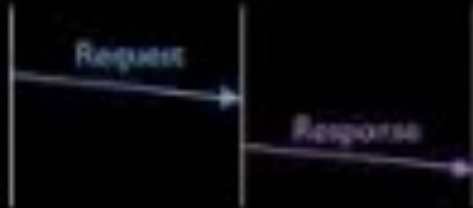


- Discovered new security threat: Attackers can launch *reflected* Denial of Service attacks using “middleboxes” (firewalls, censorship boxes, etc...)
- Method uses TCP
(previously thought to be resistant to amplification attacks)

Middleboxes make TCP-based amplification possible



What packets best trigger middleboxes?



What amplifications are attainable?