



Live Editing of Network Streams

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SAND2016-6897C

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Problem Statement:

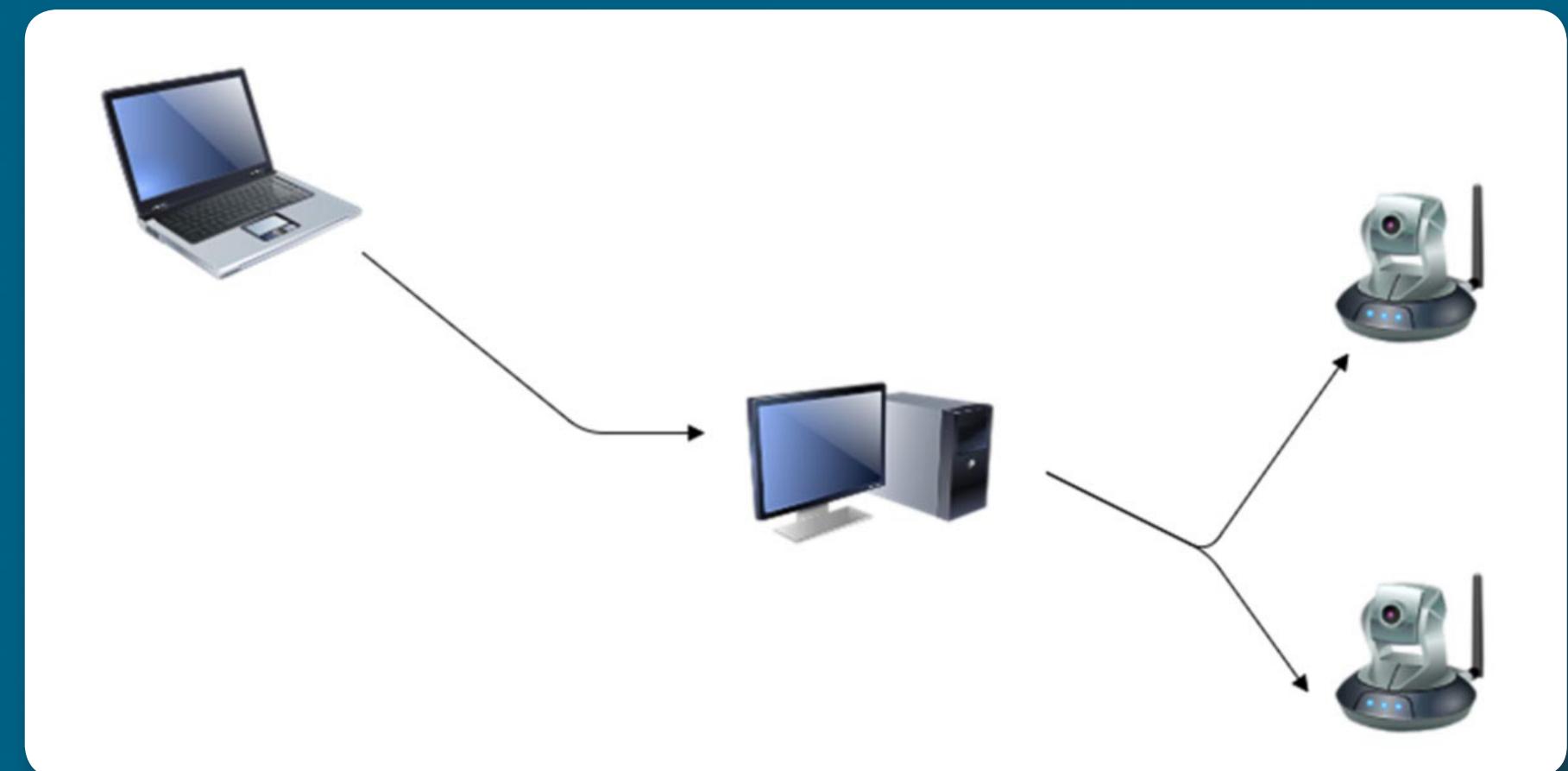
Hacking Surveillance Cameras have become a more prominent threat to society. Therefore, the objective of the project is to create a middle-man attack to hijack live camera feeds from three Ethernet surveillance cameras to understand and look into mitigations of such attacks and the evidence pertaining to it. The most important part of the project is the editing of the live video streams to make the same footage repeat constantly by using the Live Editing of Network Streams (LENS) software created by Zach Banks and Eric Van Albert.

If the attack is done correctly, the attack should be unnoticeable when completed.

Objective and Approach:

To begin, we connected three cameras to an old PC using a Network Interface Card (NIC) with four Ethernet ports. Once the cameras are connected, we used Wireshark, an open source network packet analyzer, to find the initial IP addresses of each camera in order to retrieve the software for the cameras to create new static IP addresses. The new IP addresses are used for communication between the computer and the cameras.

After the connections are secured, the LENS software was used to edit any packet while being undetected.



Results:

The hijacker is able to capture, alter, modify, or spoof, any packet while being completely transparent. The hijacker could even overlap the loop video with words or the original timestamp.

Impact and Benefits:

This project will determine if this is a realistic threat scenario and investigate potential mitigations. For instance, a hacker could use the software to break into a security guard's computer undetected and loop a bank's cameras while his partners actually rob the bank. No trail of evidence would be left behind unless the robbers were careless or the hacker wanted to leave the security guard a message. The research of this project could help alleviate such activity.