Dataset description

We collected data for all the devices connected to the network. Depending on the experiment performed, the traffic was captured for the entire network (Active and Idle), a part of the network (Scenarios) or a single device, filtered by a distinctive ID such as a MAC address (Power, Interactions and Attacks).

However, the experiment used in our case study was the Interactions experiment.

Interactions experiment

In this experiment, all of the devices in our environment were powered on individually, and the network traffic was captured in isolation for a duration of two minutes after which the device is plugged into the power source. The device's MAC address is set in Wireshark as the capture filter, not to include data produced by the router or other non-IoT devices that may have been connected to the network.

The capture continues for an additional 15 seconds to capture any delayed packets that remain from the activity. Possible interactions via the companion app were discovered by either looking through the documentation provided by the manufacturer or experimenting with the app.

Four types of Interactions were considered: - Physical (Using buttons or other manual commands on device or using native voice commands), - LAN App (Using companion app on a mobile device, while being on same network as the IoT device), - WAN App (Using companion app on a mobile device, while being on different network from the IoT Device), and - Voice (Using a voice assistant, like Google assistant or Amazon Alexa, to command the IoT Device).

Each experiment was repeated n = 3 times in order to generate sufficient network packets.

Naming conversion

Each packet naming was based on a combincation of the four types of interaction experiments conducted and the device name.

```
devicenameLanPhysical_ExperimentNumber.csv
devicenameWanPhysical_ExperimentNumber.csv
```

This is different based on the device type. - Camera is a combincation of LAN, and WAN with each of the physical activities. - Physical - Photo - Recording - Watch In total a camera will have a 18 different packets if each experiment is conducted 3 times. `bash amcrestcamLANPHOTO_1.csv amcrestcamWANRECORDING_2.csv amcrestcamLANWATCH_3.csv` - Audio is a combincation of LAN, WAN, and voice with each of the physical activities. - Physical - Volume off - Volume on In total an audio device will have a 24 different packets if each experiment is conducted 3 times. `bash echostudioLANVOLUMEOFF_1.csv echostudioLOCALVOLUMEON_2.csv echostudioVOICEVOLUMEON_3.csv echostudioWANVOLUMEOFF_1.csv` - Home automation is a combincation of LAN, WAN, local, and voice with each of the physical activities. - Physical - On - Off In total a home automation device will have a 24 different packets if each experiment is conducted 3 times. `bash amazonplugALEXAON_1.csv amazonplugLANOFF_2.csv amazonplugWANOFF_3.csv amazonplugLOCALON_1.csv`