



C1 The Walls Are Listening: A Forensic Study of Home Personal Assistants

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After attending this presentation, attendees will be more aware of the types of forensic artifacts that can be recovered from devices connected to the Google® Home™ and Amazon® Echo™.

This presentation will impact the forensic science community by providing a method for the digital investigation of the Google® Home™ and Amazon® Echo™ in a controlled environment. Since these devices have only recently been developed, not a lot of forensic research exists. Recently, law enforcement tried to gain access to Amazon® Echo™ cloud data to help solve a murder. It is believed that these home personal assistants store data in places other than the cloud.

Home personal assistants, like the Google® Home™ and Amazon® Echo™, are increasing in popularity around the world. These devices are always on or always listening, waiting for the user to say the wake phrase. This research had three goals: (1) to determine exactly when the Google® Home™ and Amazon® Echo™ were recording an individual by recovering forensic artifacts from the devices that are connected to them; (2) to determine if the wake phrase was necessary for the home personal assistant to be recording and remembering an individual's conversations; and, (3) to see if these home personal assistants are sending data to third parties.

Data collection required a new Google® Home™ and Amazon® Echo™, along with two Android™ phones and two iPhones®. Two user identities were created; each user had an Android™ and an iPhone®. The Androids™ were connected to the Google® Home™ and the iPhones® were connected to the Amazon® Echo™. Two different types of scripts were created, a script in which the user talked directly to the device and a script in which the user talked indirectly to the device. Using a controlled environment, the scripts were read, ensuring the devices heard nothing that was not scripted. The phones were then imaged using Magnet Acquire™, processed with Axiom Process™, and examined with Axiom Examine™. Personal advertisements were checked on each phone on two different occasions by going to four websites that are well known for having a substantial amount of advertisements. The advertisements were counted and the content was noted. A control phone was also checked to make the process more objective. Chi-square statistics was used to find significant differences between categories of personal advertisement.

Artifacts from the Amazon® Echo™ were visible on both iPhones® when viewing the image on Axiom Examine™; however, the artifacts were only from the Alexa application. No artifacts could be recovered from the Google® Home™ application on the Androids™, but several artifacts from other applications that had been used, such as IFTTT™ and Evernote™, could be extracted. The devices showed no sign of recording when they were not being directly spoken to, based on the online history. A significant difference was found between the ads on the Androids™ and iPhones® during the second trial.

Home Personal Assistant, Forensic Artifact, Advertisements