Institute of Cyber Security for Society

WHEN GOOGLING IT DOESN'T WORK: THE CHALLENGE OF FINDING SECURITY ADVICE FOR SMART HOME DEVICES

Sarah Turner, Jason R.C. Nurse, Shujun Li (slt41, j.r.c.nurse, s.j.li@kent.ac.uk)

University of Kent

Introduction

There is **little uniformity** between how **home IoT devices** are managed, and **little documentation** supplied to help users understand how to **secure their devices**. Users may **turn to the Internet** to find answers to any questions they may need.

This research used **search engine results** to understand the gaps in, and suggest improvements around, **cyber security advice presented to home IoT users**.

Method

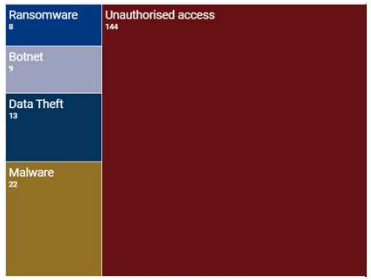
- We analysed results from **two types** of search engine queries:

i. *14 researcher-refined **generalized phrases** (e.g. "smart devices cyber security help") and*

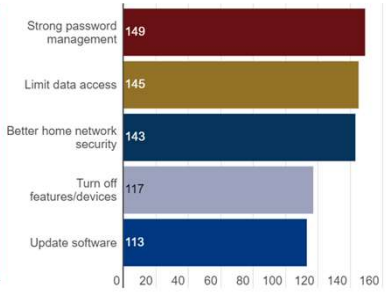
ii. *using **product information from 18 of the most commonly used devices in the UK**: Smart TVs (and streaming devices) and smart speakers (e.g. "Amazon Echo security").*

- Using Google, Duck Duck Go and Bing, non-paid search results from the first two pages were subjected to a manual content review based upon pre-defined criteria.

Top five threat types



Top five advice types



Results

The review considered 427 webpages from 234 organizations.

- 53.41% were either news organizations or websites offering news and opinion.
- 53.40% of the webpages were from 2019 or 2020, with two dating back to 2011.

Threats

57 individual types of threats were raised. **Threats were typically vaguely stated**, ("IoT devices are top targets for hackers") giving readers little opportunity to understand the specifics and how it may apply to them.

Advice

1342 pieces of advice were counted, on 54 unique topics.

- The majority of advice came from **organizations not associated with the devices** they discussed, preventing specific guidance.
- Within a topic, **advice was often contradictory** (see Figure 1 as an example).

Top advice issues

- **Strong password use**: several examples deviated from current UK governmental guidelines in different ways.
- **Limit data access:** often recommended without exploring what this means for the device's features.
- **Improving home network security:** referred to without detailed instructions as to how to do it, or with guidance from ISPs.
- **Steps that may come with additional costs:** e.g., password managers, VPNs, anti-malware.
- **Lack of information about end of life device management**, or what happens after updates cease

Conclusions

The majority of advice found was **not actionable without further understanding, learning and potentially investment by the reader**.

In particular, the **reader was never guided to consider their own situation**, and threats specific to them and their device use.

Implications

Device manufacturers should **provide use cases** to show how to mitigate specific threats using the device's security features.

Device manufacturers **should provide directly actionable security guidance** throughout device life direct to the device or app.

Search engine results should **reflect more prominently security resources from organizations such as** manufacturers and governmental bodies.

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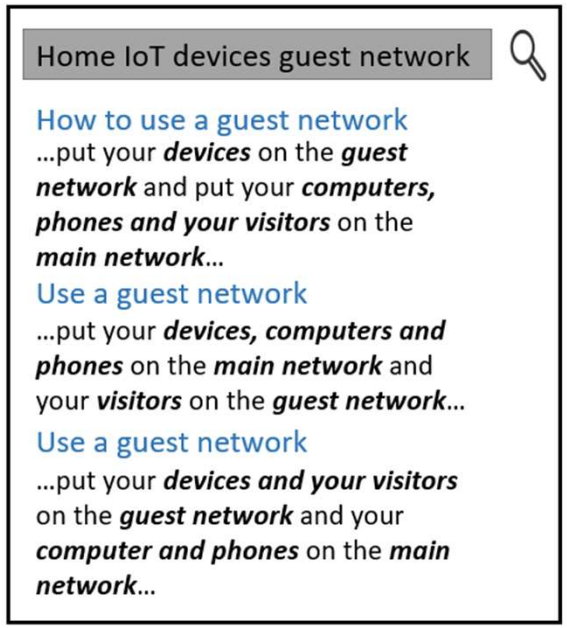

Figure 1: An illustration of the seemingly contradictory advice a user might find when searching for cyber security information

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School of Computing, University of Kent, Canterbury, Kent CT2 7NZ, UK.

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