



IoT Light Bulb Covert Channel

Extended Functionality Attack on Smart Lights

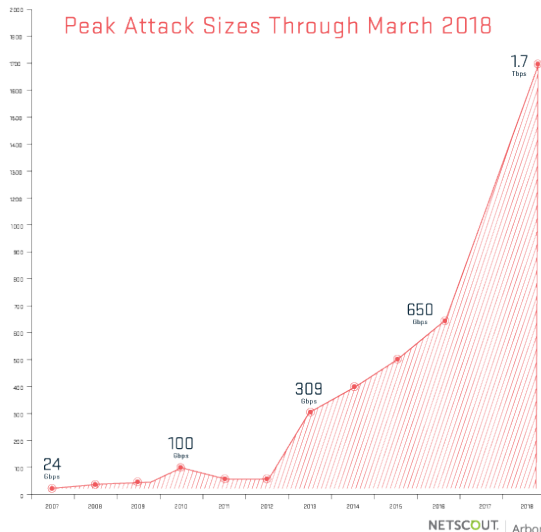
Julia Wanker, Bennett Piater

Taxonomy of IoT Attacks

- ① Ignoring Functionality
- ② Reducing Functionality
- ③ Misusing Functionality
- ④ Extending Functionality

Ignoring Functionality

Ignoring Functionality



Reducing Functionality



Figure: NYC Blackout of 1977 (Allan Tannenbaum/Getty Images)

Misusing Functionality

Create Discomfort

- Heat in summer, AC in winter
- Flash bedroom lights at night
- Turn on AC in bathroom in the morning

Generally be Annoying

- Turn on lights
- Open Faucets
- Run Washing Machine

Misusing Functionality

Create Discomfort

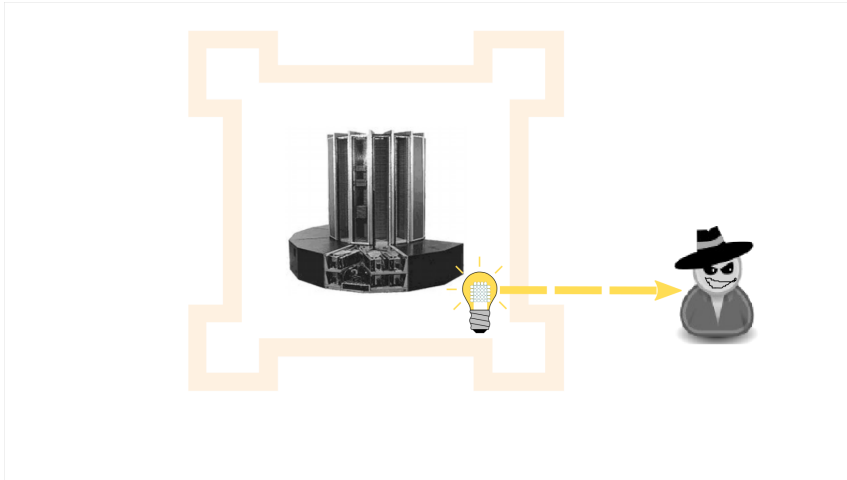
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... when the owners leave for vacation.

Extending Functionality





Ronen, Shamir Paper

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Requirements for Covert Channel

Correctness

Switch between 2 brightnesses that can be robustly distinguished by a sensor.

Covertness

Use brightnesses so similar or switch so fast that a human cannot distinguish them.



Questions?

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