Risk detection with a UAV

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Introduction

- Company buildings can leak information, including WIFI traffic
- WIFI packet Partly readable
- Use Unmanned Aerial Vehicles (UAV) to capture traffic

Research question

Which sensitive company info can be deduced from encrypted wireless network traffic and how effective can the use of a UAV be in capturing traffic that is not attainable using conventional WIFI sniffing methods?
802.11 frame

MAC Address
(Media Access Control Address)

00 A0 CC 23 AF 4A

Vendor #

OUI

(Unorganizationally Unique Identifier)

Serial #

UAA

(Universally Administered Address)
Information extraction
Unique MAC addresses

- Each device has an unique identifier
- Devices can be related to employees
  - Indication of office occupation
  - Activity across the day can be tracked, using timestamps
- Mapping is tricky
Information extraction
Device categorization

- MAC address reveals vendor
- Gives insight into vendor distribution
  - Company may prefer one particular vendor
- Vendors can be linked to device types
Information extraction
Passive movement tracking

- Employees may carry their devices along with them.
- Devices connect to different Access points (AP).
- Movement tracked by targeting different APs.
- Movement can only be tracked at a coarse-grained level.
• Booming market ($93 billion in coming decade)
• Often used for aerial inspection
• Different types:
  ▶ Fixed-wing
  ▶ Rotary-wing
  ▶ Flappy-wing
  ▶ Blimp / balloon
UAV
Risk of detection

- Little resistance of regular security measures (cameras, fences)
- Urge to develop interception systems is growing
- Rules and regulations become more strict
Conclusion

Overall, different types of information can be deduced from encrypted wireless network traffic. This includes office occupation, vendor usage, coarse grained tracking and traffic flow. To capture such traffic, UAVs can be used due to their manoeuvrability and relative low detection rate. However, efforts are made to restrict the use of UAVs and interception systems are being developed.
Questions

3. guowei2014
6. https://commons.wikimedia.org/wiki/File:MetaplaneInFlight1.PNG