* pres/demo
  + 15-20 minutes
    - Q&A after
    - No hard upper limit
  + How we did it
  + Actual demo
  + How it relates to wireless security
    - How to solve it
  + Written documentation
    - For gates
    - 1 page overview
* Structure
  + Acronyms
  + True/false
  + Short answer
    - Ex: vulnerabilities of WPA
  + Scenario
    - Future of the tech

**Topics**

* 4 main mobile security concerns
  + Device loss/theft
  + Application security
    - privileges
  + Device data leakage
    - snooping/sniffing
  + Malware
* Evolution of data networks
  + Telegraphy to packet switching
    - Telegraphy to telophany to PST(circuit switching) to packet switching
  + Circuit switching vs packet switching
    - Old phone lines w/ seperate wires
    - Chop data into packets and share a line
* Mobile Networks
  + 1G
    - AMPS - Advanced Mobile Phone system
    - Vulnerabilities
      * Eavesdropping
      * Unencrypted
    - Analog
  + 2G
    - CDMA/GSM -
    - Intro of SMS (Short message system)
    - Digital
  + 3G
    - Mobile IP broadband
    - Allowed smartphones
  + 4G/LTE
    - All-IP mobile network
    - Current system
* Core principles of network and data security(C-I-A)
  + Confidentiality
    - Only authorized parties
  + Integrity
    - Data is correct
    - Encryption
    - hashing
  + Availability
    - People can get to the data
  + Information uses same +2 extras
    - Accountability
      * Every user needs to be accountable (can be tracked who does what)
    - Non-Repudiation
      * Can’t be disputed
      * You or someone stole your credentials
* OSI model
  + All People Seem To Need Data Processing
    - Physical
    - Data link
    - Network
    - Transport
    - Session
    - Presentation
    - Application
  + Functions of each layers
  + Data units of lower layers
    - 1 - Bits and bytes
    - 2 - frames
    - 3 - packets
* IPv4 vs IPv6
  + Developing 6
    - Running out of IP addresses
    - 128 bits vs 32
  + Implementation hurdles
    - Cost to replace hardware
* WiFi protocols
  + Supports 2.4 GHz and 5GHz
  + IEEE 802.11 standard
    - B, g, n, ac
  + Unlicensed channels(not physics just that this is for UC)
* WEP - Wire Equivalency Privacy/Wireless Encryption Protocol
  + 64-bit and 128-bit encryption key
  + Trash, know the vulnerabilities
  + Know control algorithms
  + RC4
  + CRC-32 error check(cyclic redundancy check)
    - 40-bit IV(initialization vector)
  + Weaknesses?
* WPA
  + Wrapper for WEP
  + TKIP - Temporal key integrity protocol
  + MIC - Message Integrity Check
    - Michael Algorithm
  + How does it patch holes of WPA?
    - Chart for weakness in WEP
    - Know the chart
  + Authentication
    - PSKs - pre shared key
    - RADIUS
      * Authentication service
      * Often off site
    - EAP - Extensable Authentication Protocol
      * How does it work?
* WPA2
  + Current version - can be broken, very hard
  + AES protocol - advanced encryption standard
  + 256-bit
  + Key hierarchy:
    - Chart in notes showing
    - Master key
    - Pairwise master key
    - Pairwise transient key
    - Key confirmation key, key encryption key, temporal key
  + CCMP - Counter mode cypher…….
* Preference for WiFI data protection?
  + No security
  + WEP
  + WPA…..
* Data Threat Category
  + Data theft
    - sniffing/snooping
    - Malware
    - Phishing
  + Device control
    - Replay attacks
    - Bluejacking
    - Bluesnarfing
  + System access
    - DoS
    - Jamming
    - Rogue access point
    - Evil twin
  + Know category and techniques
* WLAN components
  + Radio card, antenna, 802.11 standards
  + Topology
    - Infrastructure mode
    - Ad hoc mode
* SSID - Service Set ID
  + Active scanning vs passive scanning
  + Know advantages and disadvantages
* 802.11 service sets
  + Basic Service Set
  + Extended Service Set
  + Independent Basic Service Set
  + Mesh Basic Service Set
  + Know what mode each is in
* Multipath
  + Signal bounces off of multiple objects
  + delay/out of phase
* WAP - Wireless Access Point
  + 4-way handshake association
    - Association vs Authentication
  + AP vs Router
* Antenna type
  + Omnidirectional
  + Semi-Directional
  + Highly directional
  + MiMo