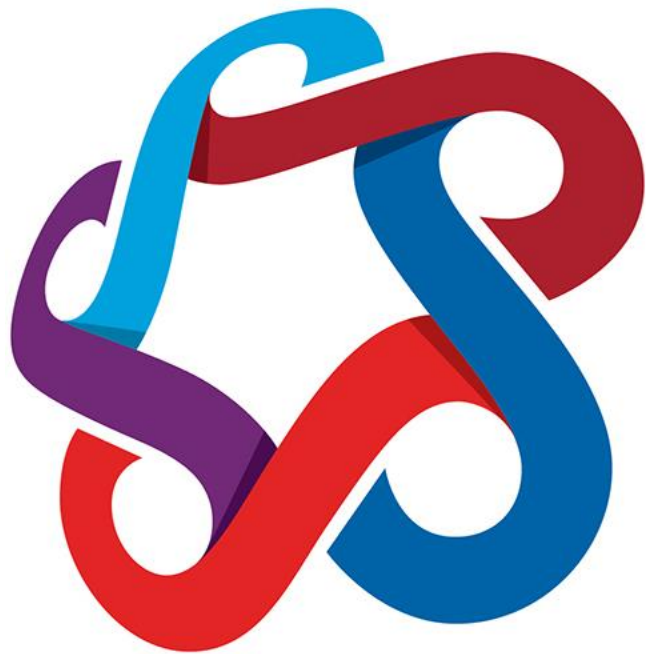# ITSC 301: Wireless Security

Module 7 – Wireless Device Management

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- Review Module 6 Lecture, Assignment, Lab
- Wireless Architecture
- Wireless Infrastructure
- Functions of Each Device
- Applications for Each Device
- Monitoring Wireless Network Traffic
- Evaluating Wireless Network Traffic

Review Lecture, Assignment and Lab

Review

- Lecture/Assignment/Lab
- Functions of common wireless security solutions
- Attacks against WEP encryption
- Attacks against WPA2-PSK encryption
- Attack against WPA2-Enterprise encryption
- WiFi DoS attacks
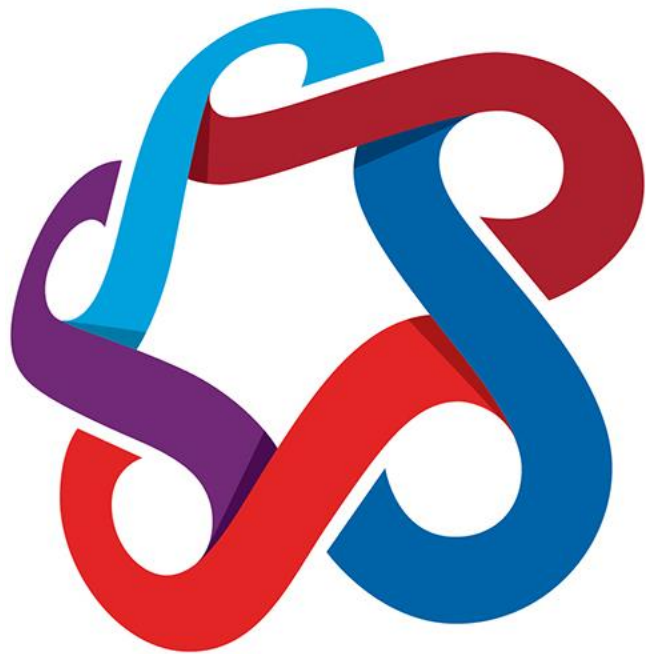
Module 7: Infrastructure Devices

Small Group Discussion

- Identify the various infrastructure devices that make up a wireless LAN and describe their specific roles.

Introduction

- Module focuses on management of wireless devices and infrastructure, especially defensive applications
- Wireless network architecture
- Understand the function/role of each device
- Application of each device
- Manage wireless devices
- Monitor wireless network traffic
- Evaluate wireless network traffic

Wireless Architecture Components

- Air medium - Service area

- Computer devices with wireless network card

- Wireless network infrastructures

  - Base stations

  - Access controllers

  - Distribution systems

Air Medium: Service Area

- Medium for transmission of electromagnetic waves

Figure 1: title
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Computer Devices with Wireless NIC

- Many computers have a built-in wireless network interface card

- Addition of external USB wireless device

- Mobile devices:
  - Laptop
  - Tablets
  - Retail inventory devices
  - Smart phones

Wireless Network Infrastructure

- Base Stations/Access Points (AP)
- Wireless Access Controllers
- Wireless Distribution Systems

Base Stations/Access Points (AP)

- ## Wireless Base Stations – not scalable
  - ◦ Individually configured and managed
  - ◦ Local power connection
  - ◦ Limited capability

- ## Access Points – lightweight unit
  - ◦ Needs wireless LAN controller to manage
  - ◦ Local power connection or POE powered from injector or access switch

Wireless Access Controllers

- Used for:
  - Centralizing Support: manage large numbers of lightweight wireless access points
  - Authentication or pass through
  - Encryption
  - Subnet roaming
  - Bandwidth management
  - Interference detection and avoidance
  - Load balancing
  - Wireless IDS
  - And more potential features

Wireless Distribution System

- Power of Ethernet (POE) to power AP
  - Switch or injector (see http://www.l-com.com/power-over-ethernet?cmp=LM1)
- Network cabling: typical > cat 5 cabling
- Network access switches
  - Used to connect AP on service area to network and wireless LAN controller
  - Allow
- Network routers
  - Used to route necessary protocols from wireless LAN controller and AP

Module 7: Applications for Wireless Client Devices

Small Group Discussion

- Discuss the applications for various wireless client devices.

Applications for Wireless Client Device

- Describe applications for various wireless client devices.
    - Terminal emulation
    - Client/server application
    - Direct database connectivity
    - Wireless middleware

Monitor Wireless Network Traffic

- Wireless protocol being monitored (e.g., 802.11a, b, g, n) with adapter

- Some vendors have built-in monitoring with wireless LAN controller

- Otherwise, install software such as Wireshark

- Collect data and then analyze

Evaluate Wireless Network Traffic

- Search for any unwanted packets
- Identify client associations you don't want on your network or a program that shouldn't be using network traffic
- Monitor how often a program uses your network. For example, how often does a Windows Update check for updates?
- Find out what programs are taking up all of your network traffic and bogging down the network

References

SmartDraw (2018). Office Layout Plan. Retrieved from
https://www.smartdraw.com/office-floor-plan/examples/office-layout-plan/

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