IT Fundamentals

Unit - Networking

Lesson 2.8.1 - Wireless Networking Standards

IT Fundamentals Objectives (FC0-U61)
Objective 2.8 - Given a scenario, install, configure and secure a basic wireless network.

- 802.1 1a/b/g/n/ac
  - Older vs. newer standards
  - Speed limitations
  - Interference and attenuation factors

Grade Level(s)
8, 9

Cyber Connections

- **Networks & Internet**

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Teacher Notes:

Wireless Networking Standards

When considering a router, the user/organization should have two main considerations: whether the router supports wireless connections (which it should) and which wireless standard the router supports. Most new wireless routers support the 802.11ac standard, but some used ones or older ones may have an older standard like 802.11g. As standards improve, so too does the speed of data transmission. The different standards vary in their range of frequencies. For reference, here's a table to compare the different 802.11 standards.

Standard	Band	Distance
802.11a	5GHz	Up to 75 feet
802.11b	2.4GHz	Up to 150 feet
802.11g	2.4GHz	Up to 150 feet
802.11n	Both 5GHz and 2.4GHz	Up to 175 feet
802.11ac	5GHz	Up to 115 feet

Another concern with wireless routers is ***interference/attenuation***. Wireless interference occurs when something disrupts or weakens the wireless signal coming from the router. Attenuation is the loss of transmission signal strength measured in decibels. There are three main factors of attenuation: noise, physical surroundings, and travel distance. Noise refers to radio frequencies, electrical currents, or wire leakage that affect the wireless signal. Physical surroundings are things like temperature, wall barriers, or improper wire installation. Travel distance has to do with the physical distance a transmission has to travel from its current location to its central office.