Section 17:Mobile Networking

137. Cellular Technologies

Two Technologies

1. WiMAX

-802.16 Standard
-Range of a little over 17 Miles
-WiMAX box in your home can act as an 802.11 Hotspot or you can plug into it with RJ45

2. Cellular WANs (Wide Area Network)

Types of data transfer:

1. HSPA
   -Single Mbps range (3G technology)
2. HSPA+
   -Multiple Mbps range (4G technology)
3. LTE
   -10s of Mbps range (4G technology)

Tethering - Taking the signal thats coming out of our cellphone and sharing that with other devices. You can tether with cable, OR you can use your phone as a wireless hotspot

For the Exam:

1. WiMAX - 802.16 standard
2. Cellphones have tons of standards that they hid under the "G"
   Remember only two standards for cellphones for the net+ HSPA/HSPA+, and LTE

---

138. Mobile Connectivity

The test wants us to recognize what these connectivities are, their speed, and their range and thats it.

1. Z-wave
   -Home automation Technologies
   -900MHz Band
   -30 meters
   -9600 bps
2. ANT/ANT+
   -Health Devices, Watches, Workout Equipment
   -2.4GHz Band

-30 meters
-20kbps

3. Bluetooth
    - 2.4GHz band
    - Up to 100 Meters
    - 3Mbps
4. Near Field Communication (NFC)
    - Tapping your phone on things
    - Close-Range Communication
    - 13.56MHZ
    - 4cm
    - 424 kbps
5. Radio-Frequency Identification (RFID)
    - Packaging, luggage, tracking, etc
    - Passive device uses radio power to turn it on
    - 20 KHz - 10 GHz
    - 10cm - 200 meters
    - Speed is not important because it does very little data transfer
6. Infrared
    - Uses light
    - 1+ meters
    - 1Gbps
    - Line-of-sight

For the exam be aware of:

*The types of names of these technologies
*Where you might use them
*Idea of the specs above

Review:

*ANT/ANT+ are used for health appliances (e.g monitoring), run in 2.4 GHz band, range is 20 meters, and speed 20kbps

*NFC allows for very close-range data transfer, range (4cm), with transfer speed of 424 Kbps

*IR is a technology that uses infrared light, 1+ meter range, transfer speed of 1 Gbps, requires line-of-sight

---

139. Deploying Mobile Devices

Mobile Device Management - Manages the device itself
Mobile Application Management - which doesn't control the device, just the applications it needs

Personal vs. Corporate use.

Mobile Deployment Options:

1. Corporate Owned, Business Only (COBO)
    - Company owned
    - Company decides hat to do with that device they are in control of:
    - What applications are on that device
    - What encryption is used
    - What wireless is connected
    - No personal privacy
2. Corporate Owned, Personally Enabled (COPE)
    - Everyone has the same device
    - Can control devices much easier
    - people will still want to use their own devices due to privacy
    - learning curve (e.g. if an apple user gets an android phone)
3. Choose your own Device (CYOD)
    - users get to choose from a list of approved devices
    - Les of a learning curve
4. Bring your own Device (BYOD)
    - Users get to choose based on their experiences
    - Learning curve is decreased
    - very heavy device management
    - Mobile application management

Review:

- Mobile Devices are prolific and very useful in both personal and corporate environments
- Be familiar with the deployment models discussed and what the pros and cons are of each
- Consider mobile device management for privacy and productivity

---

140. Mobile Access Control

How do we deal with mobile access into our networks?

BYOD (Bring your own device)

Network Access Control (NAC) - process by which our networks allow mobile devices to access our network

-Moblie NAC
*Enterprise routers (On-boarding)
-Onboarding can use captive portal pages to use real authentification. Rely on 802.1x standards.
-Anti-malware
-Geofencing

```
*SOHO router NAC (Not enterprise)
        -Allow access via MAC addresses
                -MAC filtering
                -Whitelisting
                -Blacklisting
```

Review:

*Mobile access management must consider how to allow BYOD devices to access a network
*Mobile on-boarding is the process of making a network available to BYOD mobile devices; one standard is a captive portal sign-in page
*In a SOHO router, access control can be decided using whitelisted or blacklisted MAC addresses.

QUIZ

1. Which of the following is not a cellular data standard?
   a. G-3
   b. HSPA
   c. HSPA+
   d. LTE
2. Which of the following is not a mobile connectivity technology?
   a. RFDI <-----Letters are switched from RFID to RFDI 'tricky'
   b. Z-wave
   c. ANT
   d. NFC
3. Which of the following is not a mobile deployment option?
   a. COBO
   b. COPE
   c. BYOB
   d. BYOD
4. Which of the following is not an element that is exclusive to Mobile NAC?
   a. Two-factor authentification
   b. Onboarding
   c. Captive Portal
   d. Geofencing