Solutions

Chapter 6: Understanding mobile devices and wireless networks

Knowledge probe: Wired versus wireless networks, pages 59–60

Table 6.3

Issue	Wired networks	Wireless networks
How hard is it to set up?	Difficult to reasonably difficult (because more numbers of components are used during installation and require cables to be connected to each and every computer in the network)	Easy installation (neat and clean, no untidy cables are used in this)
Security	Good, as physical device needed to intercept	Weak (because wireless communication signals travel through the air and can easily be intercepted but can be improved by using encryption techniques)
Cost	Less (Ethernet, cables and switches are not expensive)	More (wireless adapters and access points are quite expensive)
How hard is it to connect a new device?	More difficult	Very easy
How good is it for mobile devices?	Limited	Excellent
Reliability	High	Less high as many devices will be effected on outages
Speed in mbps and bandwidth	High, at least 100 mbps	Low, up to 54 mbps (depends upon standards) Check current situation: improvements in wireless protocols are rapidly narrowing the speed difference between wired and wireless networks
Strength of signal	High	Lower on average with distance weakening
Interference	Nil	High risk
Connection set up time	More	Less

Standards	Ethernet Gigabit Ethernet 802.3 etc.	802.11a/b/g/n etc. Gigabit Wi-Fi Bluetooth

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Identify

1 Natural features such as mountains and man-made structures, the number of towers, the bandwidth and transmission power of a tower, the number of users in the area of a tower.

2 Bluetooth technology is used for transferring small amounts of data between two devices around 10 metres apart. WiFi is used to provide high speed Internet access over greater distances to many devices and is faster than Bluetooth.

Analyse

3 WiFi has greater latency than wired as signals must communicate with a router. This is called 'ping' and is only an issue for some activities such as gaming. Streaming of video would not suffer as greatly from high latency, as it would from restricted bandwidth.

Wifi offers less security as eavesdropping on wired networks is only possible for devices that are connected physically to the network. Wifi is susceptible to interference by physical objects.

4 Students' responses will vary.

Research

5 Students' responses will vary.