Wireless networking

IB Computer Science

Content developed by Dartford Grammar School
Computer Science Department
HL Topics 1-7, D1-4

1: System design
2: Computer Organisation
3: Networks
4: Computational thinking
5: Abstract data structures
6: Resource management
7: Control
D: OOP
HL & SL 3 Overview

Network fundamentals
3.1.1 Identify different types of networks
3.1.2 Outline the importance of standards in the construction of networks
3.1.3 Describe how communication over networks is broken down into different layers
3.1.4 Identify the technologies required to provide a VPN
3.1.5 Evaluate the use of a VPN

Data transmission
3.1.6 Define the terms: protocol, data packet
3.1.7 Explain why protocols are necessary
3.1.8 Explain why the speed of data transmission across a network can vary
3.1.9 Explain why compression of data is often necessary when transmitting across a network
3.1.10 Outline the characteristics of different transmission media
3.1.11 Explain how data is transmitted by packet switching

Wireless networking
3.1.12 Outline the advantages and disadvantages of wireless networks
3.1.13 Describe the hardware and software components of a wireless network
3.1.14 Describe the characteristics of wireless networks
3.1.15 Describe the different methods of network security
3.1.16 Evaluate the advantages and disadvantages of each method of network security
Topic 3.1.12

Outline the **advantages** and **disadvantages** of wireless networks
Advantages

- **Uses unlicensed radio spectrum**
  - Doesn't cost anything

- **LANs can be set up without cabling**
  - Doesn't take space or time to lay the cables. No extra cost on cables

- **WiFi can support roaming between access points**
  - People can switch from router to router automatically depending in which connection is best

- **Global standards (eg. 802.11n)**

- **Setup costs are minimal**
  - Many types are available on the market and they are affordable
Disadvantages

- **Interference**
  - as the 2.4GHz spectrum is often crowded with other devices

- **Limited Range**

- **WEP**
  - this encryption is not difficult to hack and WPA2 has solved this problem

- **Access Points**
  - these can be used to steal data

- **Health Concerns**
In an exam be prepared to **EVALUATE**

- What’s good about it?
- What’s bad about it?
- When is it most appropriate?