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 3.1.13

Describe the **hardware** and **software** components of a wireless network
Hardware components

- **Node**: PC, Laptop, Tablet, Printer
- **Wireless network interface card**
- **Radio waves** (Bluetooth/WiFi)
- **Connection point**: Wireless AP / Router
Software components

- **Network Operating System** (with drivers)
- **Protocol stack** (TCP/IP)
- **Applications** (Browser/File explorer)