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 3.1.16

Evaluate the **advantages** and **disadvantages** of each **method** of network security
Exam note!

This curriculum point requires you to evaluate the different options.

That is exam speak for knowing/discussing advantages, disadvantages and for comparing them against one another to arrive at a conclusion.
**userID**

- **Advantages:**
  - Access rights to the network can be set for each user
  - User groups can be created to manage user rights in batches

- **Disadvantages:**
  - A userID can be stolen
  - System can be bypassed
  - Does not protect against intercepting messages in the network
Encryption security

- **Advantages:**
  - A strong encryption is very hard to break
  - Computer are fast enough to encrypt data on-the-fly

- **Disadvantages:**
  - Often, users are lazy and take a password that is easy to guess
  - The password needs to be transmitted over the network to receiver to allow them to read the message
  - Some encryptions are designed to have backdoors built in