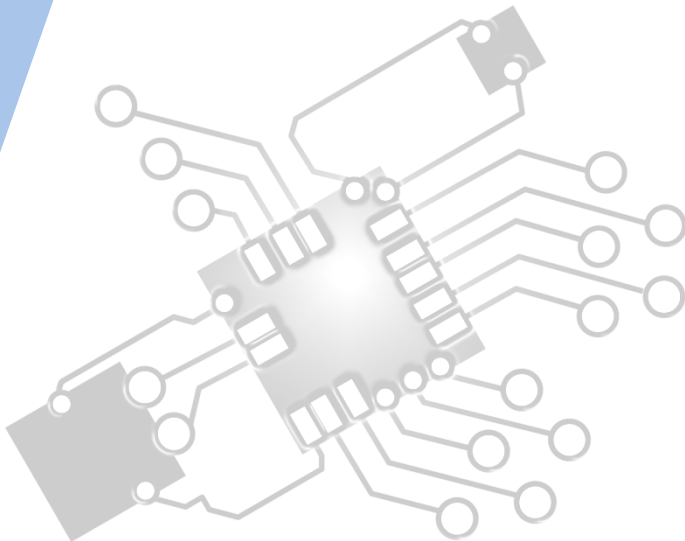# Data transmission

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

1: System design

2: Computer Organisation

3: Networks

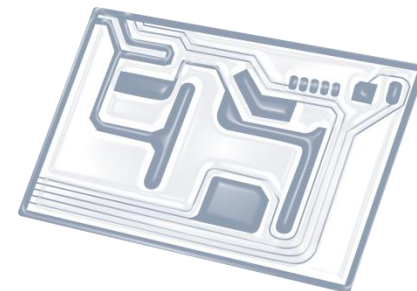4: Computational thinking

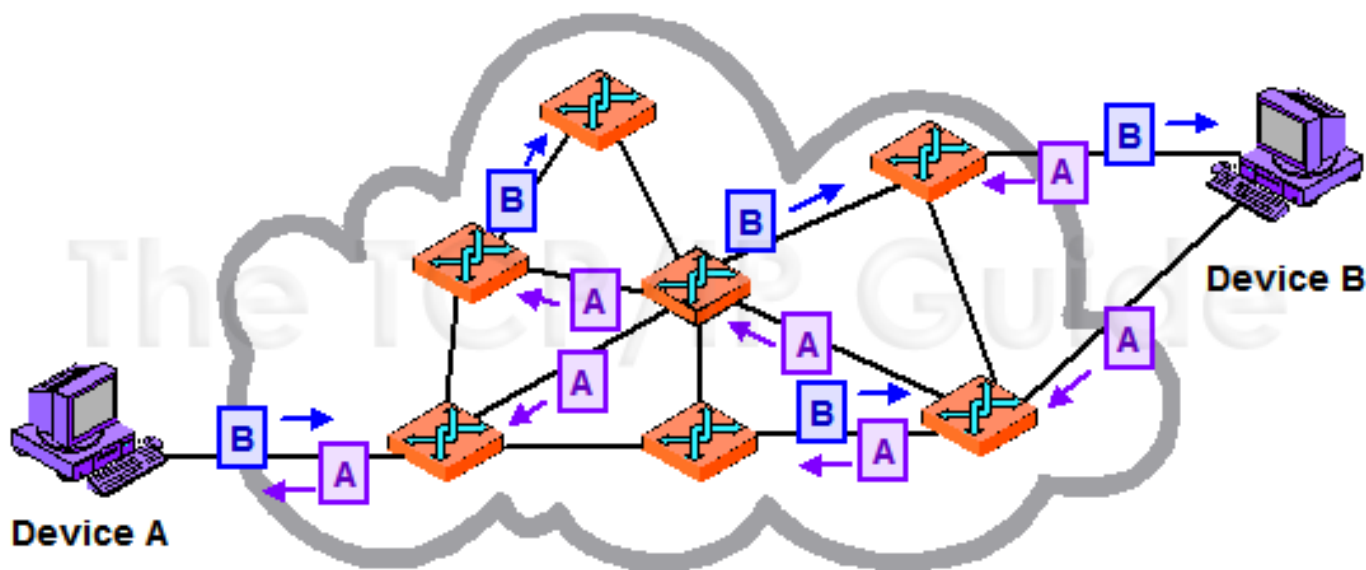5: Abstract data structures

6: Resource management

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Topic 3.1.11

Explain **how data is transmitted** by **packet switching**

Definitions

- **Packet**: A packet is the **unit of data** that is routed between an origin and a destination on the Internet or any other packet-switched network.

- **Packet switching**: Packet-switching describes the **type of network** in which relatively small units of data called packets are **routed through a network** based on the destination address contained within each packet.

How it works

The original message is Green, Blue, Red.
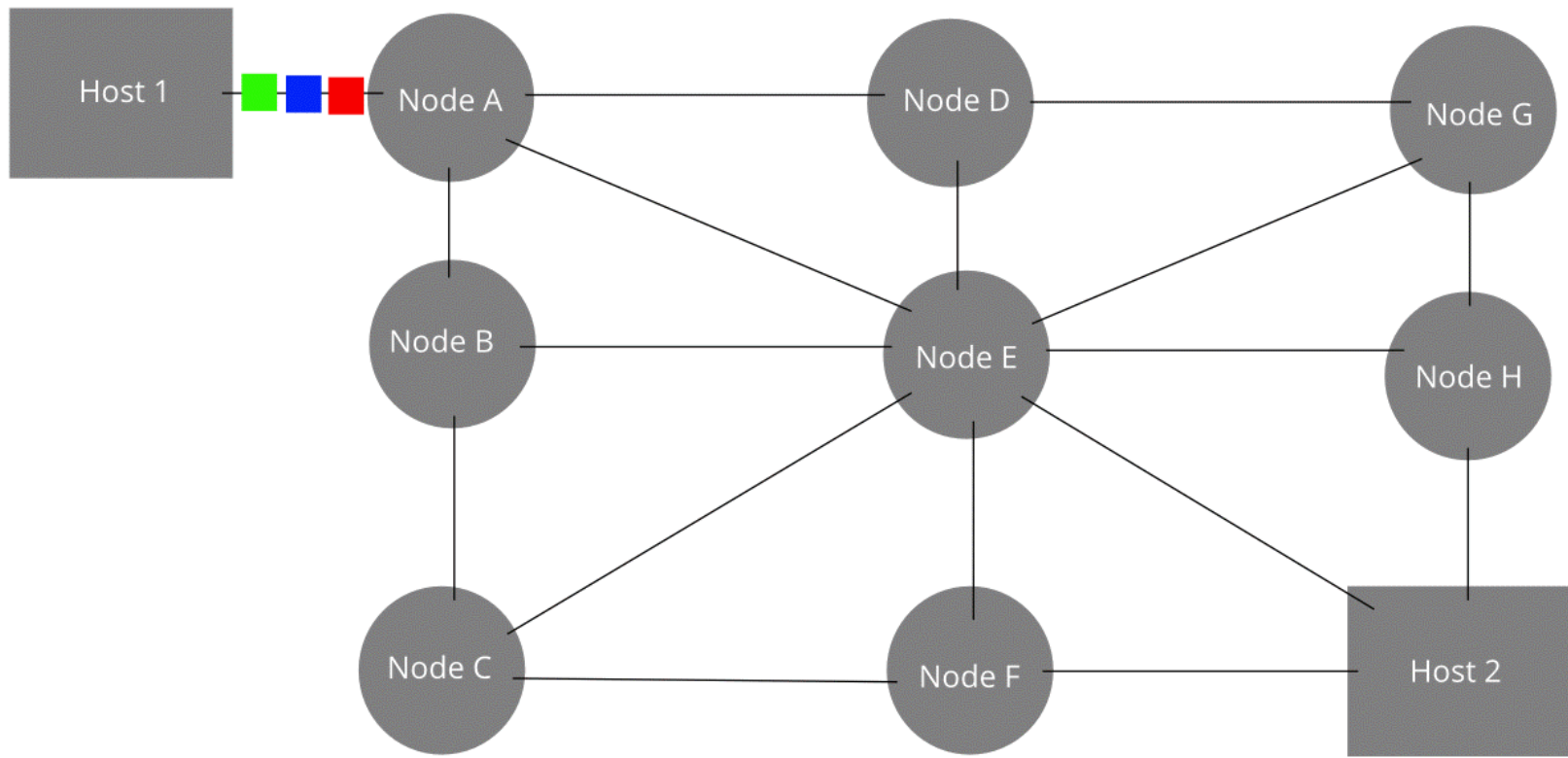
Video: Packet Switching

Video: Undersea Cables
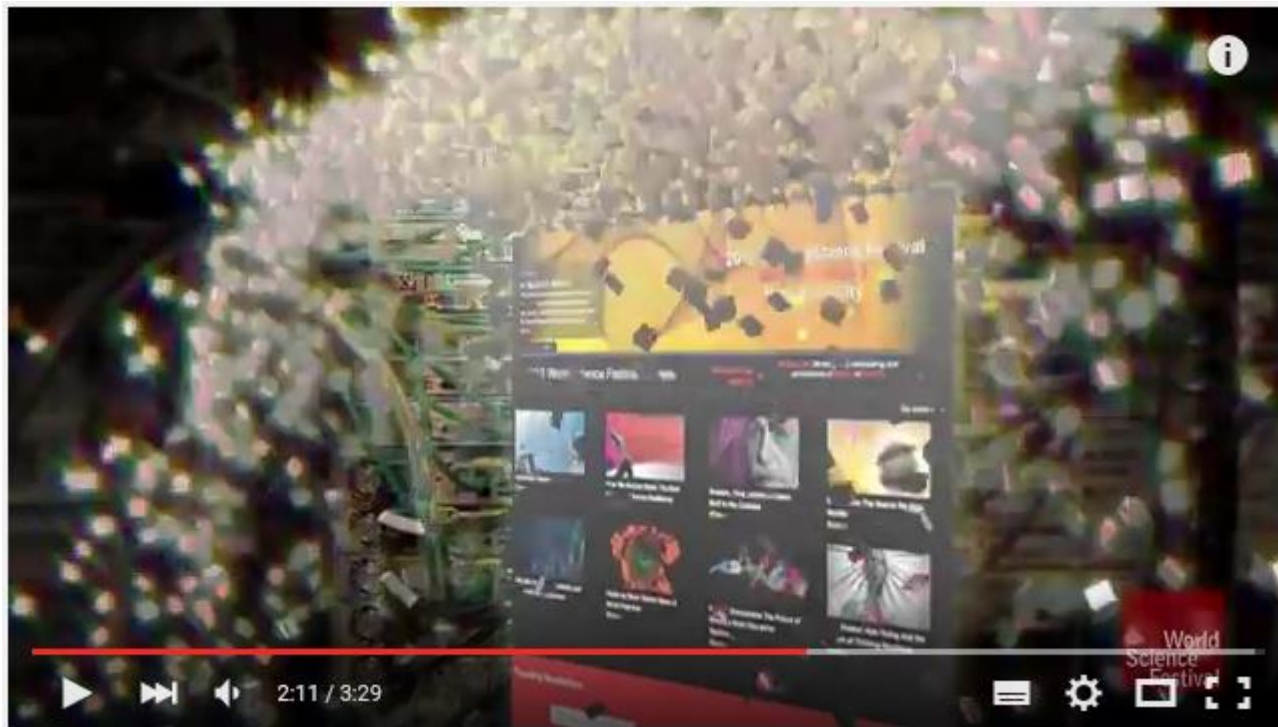
https://www.youtube.com/watch?v=IlAJJI-qG2k