

# OCR Computer Science AS Level

## 1.3.2 Networks

Flashcards



# What is a network?



# What is a network?

Two or more computers connected together that transmit data



# What is physical topology?



# What is physical topology?

Physical topology is the physical layout of the network



# What is logical topology?



# What is logical topology?

The topology that describes the flow of data through a network



# What is bus topology?





# What is bus topology?

Topology in which all terminals are connected to a backbone cable



Name an advantage of  
the bus topology



## Advantages of bus topology?

- Cheaper to set up
- Doesn't require any additional hardware



# Give a disadvantage of the bus topology



## Disadvantage of Bus Topology?

- If backbone cable fails, entire network gets disconnected
- As traffic increases, performance decreases
- All computers can see data transmission



# What is star topology?



# What is star topology?

A network which uses a central node to direct the flow of data, each terminal is connected to the central node.



Name two advantages  
of the star topology





# Question

Two from:

- Performance is consistent with heavy network usage,
- If one cable fails only that station is affected,
- Transmits data faster, so it gives better performance,
- It's not difficult to add new stations,
- No data collisions.



Name a disadvantage of  
the star topology



## Disadvantages of Star Topology?

- Expensive due to switch and cabling
- If the central switch fails the rest of the network fails



# What is a mesh topology?



# What is Mesh Topology?

A topology in which every node is connected to every other, most commonly found with wireless technology



Name two advantages of  
the mesh topology



# Advantages of Mesh Topology?

Two from:

- No cabling cost
- As number of nodes increase, reliability and speed increases
- New nodes automatically get incorporated
- Faster since data doesn't travel through a central switch



Give a disadvantage of  
the mesh topology





## Disadvantages of Mesh Topology?

- Need to purchase devices with wireless capabilities
- Maintaining the network is difficult



# What are protocols?



# What are protocols?

Sets of rules defining how two devices communicate with each other



# Why are protocols standard?



# Why are protocols standard?

Protocols are standard so devices from different manufacturers don't have problems communicating



# Describe the structure of the Internet



# Describe the structure of the Internet

The Internet is a global network of interconnected networks



# What does TCP stand for?





What does TCP stand for?

Transmission Control Protocol



# What does IP stand for?



# What does IP stand for?

## Internet Protocol



# What is the function of the application layer during data transmission?



What is the function of the application layer during data transmission?

The Application Layer specifies what protocols need to be used to relate the application to what it's being used for.



# What is the role of the transport layer during data transmission?



What is the role of the transport layer during data transmission?

Establishes an end-to-end connection between the source and recipient computers. It also splits up the data into packets.



# What is the role of the network layer during data transmission?





What is the role of the network layer during data transmission?

Adds the source and destination IP address.



What does the application layer do  
when it receives data?



What does the application layer do when it receives data?

Presents data in the form it was sent



What does the transport layer do when it receives the data?



What does the transport layer do when it receives the data?

Removes the port number and reassembles the packets.



What does the network layer do when it receives the data?



What does the network layer do when it receives the data?

Removes the IP address



What does the link layer do when it receives the data?





# What does the link layer do when it receives the Data?

## Removes the MAC addresses



# What is a Local Area Network?



# What is a Local Area Network?

A network spread over a small geographical area/ positioned on a single site



# What is a wide area network?



# What is a Wide Area Network?

A network spread over a large geographical area, usually requiring extra hardware.



# What does DNS stand for?



# What does DNS stand for?

## Domain Name System



# What is DNS?





# What is DNS?

The name given to the method of naming internet resources. (.com, .uk etc)



# What is circuit switching?



# What is circuit switching?

The process of creating a direct link between two devices and transferring data the entire duration of the link.



# What is a requirement of circuit switching?



# What is a requirement of Circuit Switching?

The transfer and download rates must be identical on both devices.



# What is packet switching?



# What is packet switching?

A method of communicating packets of data across a network



# Give an advantage of packet switching





# Give an advantage of packet switching

- Multiple methods to ensure data arrives correctly,
- Multiple methods to arrive to destination, if one breaks you can always go through another route.
- Transfer packets over a very large network



# Give a disadvantage of packet switching



# Give a disadvantage of packet switching

- Time is spent deconstructing and reconstructing the packets



# Give an advantage of circuit switching



# Give an advantage of circuit switching

- Data arrives in logical order which results in a quicker reconstruction of data,
- Enables two users to hold a call without any delay in speech.



Give two disadvantages of  
circuit switching



## Give two disadvantages of circuit switching

- Bandwidth is wasted during periods when no data is sent
- Devices must transfer and download at the same rate
- Switches introduce electrical interference which can corrupt or destroy data



# What does the header of a data packet contain?





# What does the header of a data packet contain?

- The sender and recipient IP addresses
- Protocols being used
- Order of the packets
- The time to live / hop limit



# What does the packet payload contain?



# What does the packet payload contain?

## The raw data



# What does the packet trailer contain?



# What does the packet trailer contain?

## The checksum or cyclic redundancy check



# What is client-server networking?



# What is client-server networking?

A relationship between terminals (computers) and a single server which allows them to communicate, and share resources.



# Give an advantage of client-server networking





# Give an advantage of client-server networking

- Increased security
- Central single backups
- Data and resources can be shared



Name a disadvantage of  
client-server networking



# Name a disadvantage of client-server networking

- Expensive to set up
- Trained staff are required to maintain the network



# What is peer-to-peer Networking?



# What is peer-to-peer Networking?

A network where the terminals are all connected to each other to share resources.



Give two advantages of peer-to-peer networks



# Give two advantages of peer-to-peer networks

Two from:

- Cheaper to set up
- Easy to share resources
- Easy to maintain



Give two disadvantages of  
peer-to-peer networks





# Give two disadvantages of peer-to-peer networks

Two from:

- Peer-to-Peer networks can be used to contribute towards piracy
- Each computer has to be backed up independently

