

OCR Computer Science A Level

1.3.3 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?

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



Name an advantage of the bus topology

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



Name a disadvantage of
the bus topology



Name a disadvantage of the bus topology

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



What is the star topology?



What is star topology?

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



Name two advantages
of the star topology



Name two advantages of the star topology

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



Name a disadvantage of the 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 a 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



Name two advantages of the 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



Give a disadvantage of the 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?

So that 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 addresses.



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



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

Adds the MAC addresses to the packet



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 addresses



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 a 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 the purpose of a firewall?



What is the purpose of a firewall?

To prevent unauthorised access to a network



What is a firewall made up of?



What is a firewall made up of?

- Two network interface cards
- Firewall software



What is a proxy?



What is a proxy?

A web server that acts as an intermediary, collecting and sending data on behalf of a user, protecting their identity



Give two advantages of using a proxy



Give two advantages of using a proxy

Two from:

- Allows users to remain anonymous
- Data can be cached making it faster to load
- Reduces web traffic



What is the function of a network interface card?



What is the function of a network interface card?

Connects a computer to a network



What is the function of a switch?



What is the function of a switch?

Directs the flow of data across a network, commonly used in Star topologies



What is the function of a router?



What is the function of a router?

Connects two networks together



What is the function of a gateway?



What is the function of a gateway?

Connects two networks and translates protocols so they can communicate without any issues.



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

