Course: BBA Part III

Paper: XVII

Topic: Hardware in Networking

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Hardware in Networking

Computers need networking hardware in order to connect to each other. Routers, hubs, switches and bridges are all pieces of networking equipment that can perform slightly different tasks. A router can often incorporate hubs, switches and wireless access within the same hardware.

Routers

A **router** can form a LAN by connecting devices within a building. It also makes it possible to connect different networks together. Homes and businesses use a router to connect to the internet. A router can often incorporate a modem within the hardware.

Modems

A **modem** enables a computer to connect to the internet over a telephone line. A modem converts digital signals from a computer to analogue signals that are then sent down the telephone line. A modem on the other end converts the analogue signal back to a digital signal which another computer can understand.

Hubs, bridges and switches

Hubs, **bridges** and **switches** allow multiple devices to connect to the router and they transfer data to all devices on a network. A router is a more complex device that usually includes the capability of hubs, bridges and switches.

Hubs

A hub broadcasts data to all devices on a network. This can use a lot of bandwidth as it results in unnecessary data being sent - not all computers might need to receive the data. A hub would be useful to link up a few games consoles for a local multiplayer game using a wired LAN.

Bridges

A **bridge** is used to connect two separate LAN networks. A computer can act as a bridge through the operating system. A bridge looks for the receiving device before it sends the message. This means that it will not send a message if the receiving computer is not there. It will check to see if the receiver has already had the message. This can help save unnecessary data transfers, which improves the performance of a network.

Switches

A **switch** performs a similar role to a hub and a bridge but is more powerful. It stores the MAC addresses of devices on a network and filters data packets to see which devices have asked for them. This makes a switch more efficient when demand is high. If, for example, a game involved lots of data being passed between machines, then a switch could reduce the amount of latency.

Wireless access points

Wireless access points (WAPs) are required to connect to a network wirelessly. WAPs are usually built into the broadband router.