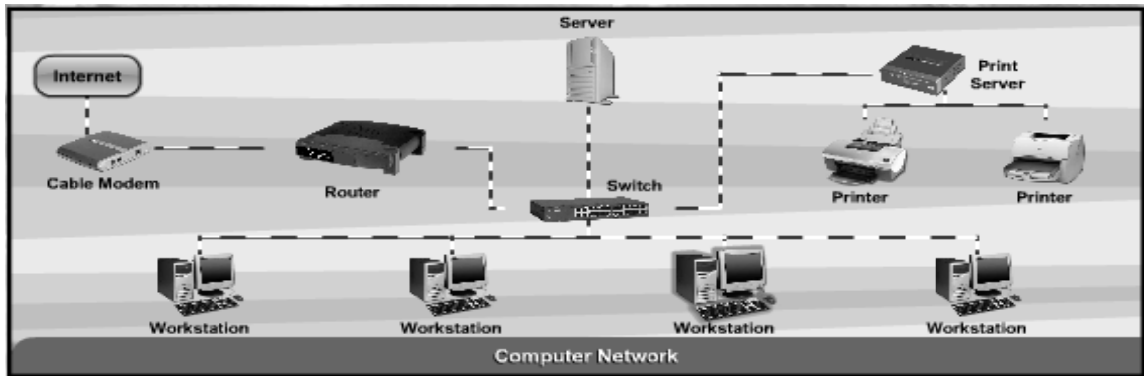


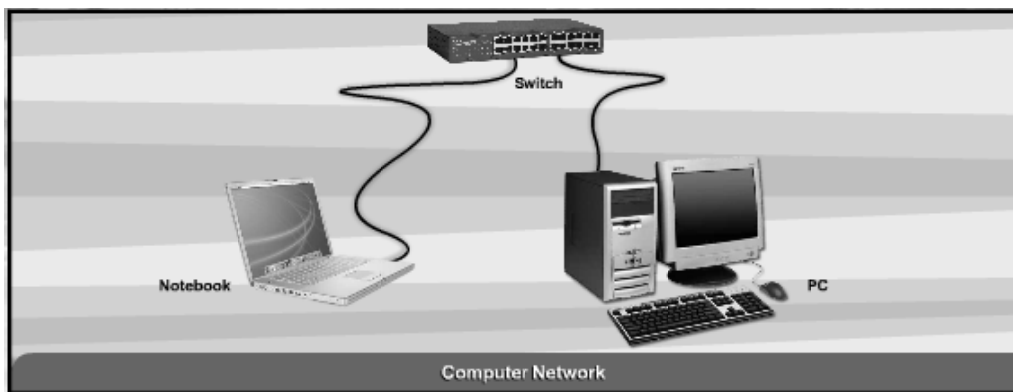
INTRODUCTION TO COMPUTER NETWORKS AND COMMUNICATIONS

COMPUTER NETWORK

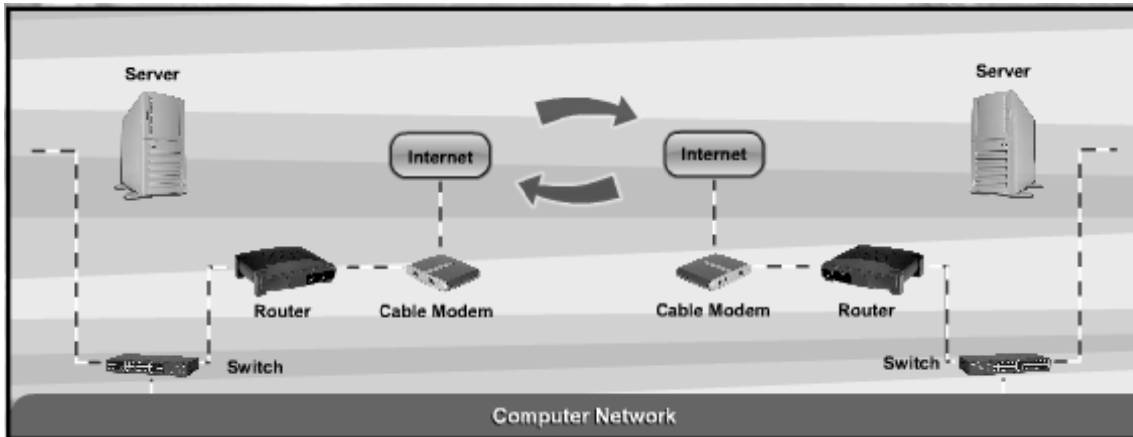
A computer network is a system of interconnected computers and peripheral devices. For example, it may connect computers, printers, scanners and cameras.



Using hardware and software, these interconnected computing devices can communicate with each other through defined rules of data communications. In a network, computers can exchange and share information and resources.



A computer network may operate on wired connections or wireless connections.



When two or more networks are linked or connected and are able to communicate with one another using suitable hardware and software, it is called an internet work.

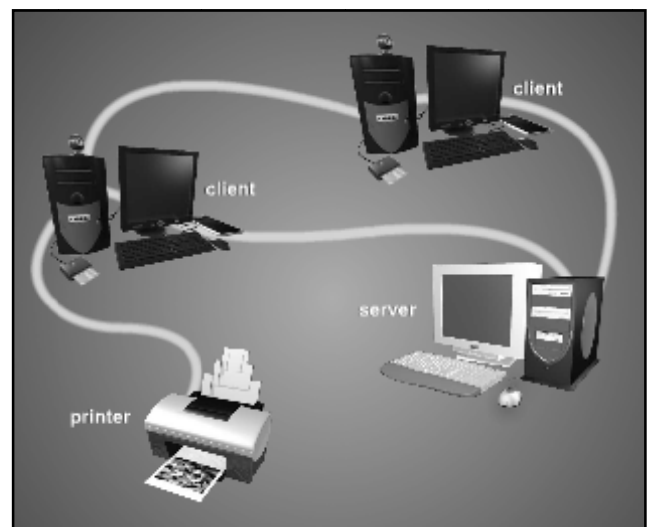
COMMUNICATIONS

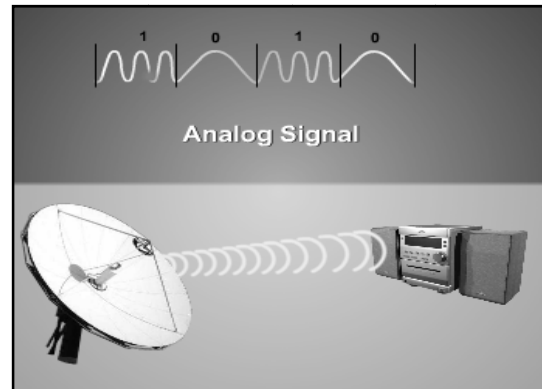
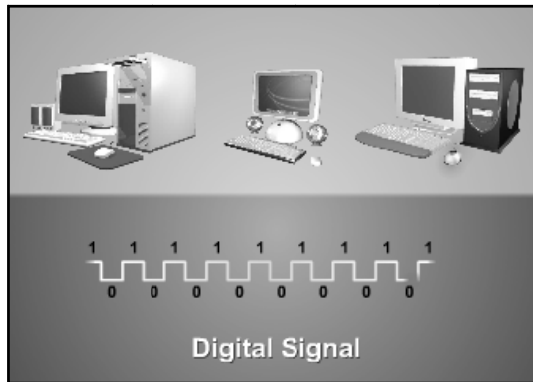
Communications is about the transfer of information from a sender, across a distance, to a receiver.

Using electricity, radio waves or light, information and data in the form of codes are transmitted through a physical medium such as wire, cable, or even the atmosphere.

The information that is transmitted (sent) can be text, voice, sound, video, graphics and images, or a combination of all these, which we call multimedia.

We transmit information or data by using two types of signals, namely analogue and digital.





Computers communicate with digital signals. The older forms of communications technology, such as telephones and radios, use analogue signals.

Therefore, in order to make communications possible from computers, across telephones and radios and back to computers and other digital devices again, there must be a signal translator, which we call – a modem.

The modem, which is short for **modulator or demodulator**, converts digital signals into analogue and back again into digital signals for information to move across the telephone line.

CONNECTIONS FOR NETWORKING

Communications among computing devices in a network can only happen through defined rules of communications and connections. In general, for communications in a network to be possible, there must be:

- ✚ a physical medium – to allow data to travel across it from device to device
- ✚ a set of rules called protocols to ensure that interconnected computing devices have the same standards for exchange of information to occur smoothly.
- ✚ a system application for managing network information flow to ensure that data transmission sent from one device is received by the intended receiver.

If any of these levels of connectivity is missing, communications for networking will not be possible.

For example, if the physical medium is cut off, there will be no communications.

If protocol between interconnected devices are not the same, data transmission will not be 'understood' between devices. If there is no

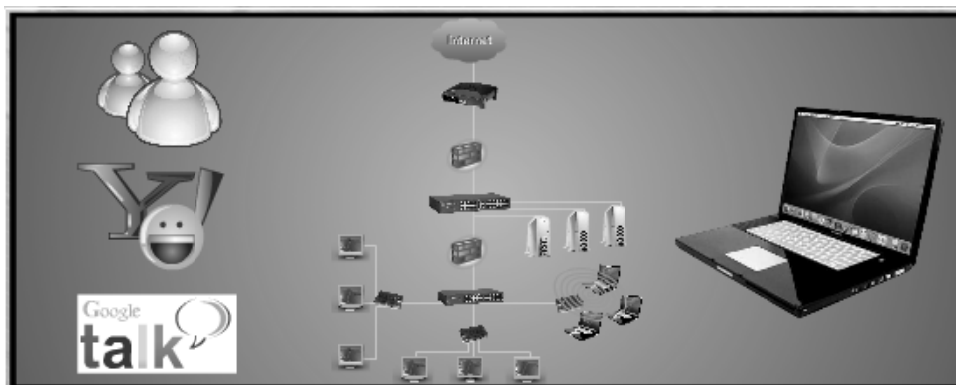
network management application available, there will be no means of ensuring that information from one device will be sent to the correct receiving device.

Protocol

Often simply referred to as a protocol, a communications protocol is a set of rules or standards designed so that computers can exchange information with a minimal errors.

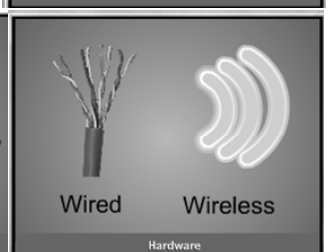
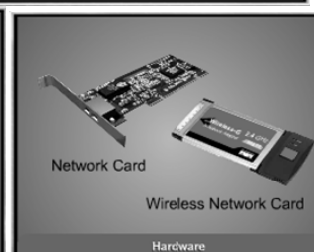
COMPONENTS OF COMMUNICATIONS

INTRODUCTION



In order for a network to properly operate, two categories of network communications components are needed; 'Hardware' and 'Software'.

Computers, hub, switch, router, network interface cards and both wired and wireless communications media fall under the 'Hardware' category.



Operating systems and applications fall under the 'Software' category.

