

# Data Communication and Networks: A Review

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**Abstract:** In this paper we have given a complete overview about **Data Communication** and **Computer Network** with its introduction advantages disadvantages and its latest technologies applied in it.

**Keywords:** Data Communication, Computer Networks.

## I. INTRODUCTION

Data communication involves the transfer of information from a sender to a receiver. Information is sent and received in form of signals. It is a two-way scheme. Communication refers to exchange of meaning full information between two communicating device.

Networks refers to the basic configurations understand each of the following configuration. It is a distributed collection of computers viewed by the user as one large computer systems. It is inter-connected by one or more transmission which can be telephone line.



## II. WHAT IS DATA COMMUNICATION

DATA communication refers to the exchange of data between to digital devices in the form of binary digits (0's and 1's) through a transmission medium that is the physical path which carries signals from one place to another via Twisted Pair Wire, Coaxial Cable....so on. The characteristics with their efficiency are as follows:

- **Reliable Delivery:** delivers the data to the intended destination.
- **Accuracy:** data is delivered without any alteration to the destination.

- **Timely Delivery:** data is delivered on time without any time lags to the destination.<sup>[1]</sup>

## COMPONENTS:

- ❖ SOURCE
- ❖ TRANSMITTER
- ❖ TRANSMISSION MEDIUM
- ❖ RECIEVER
- ❖ PROTOCOL

## III. COMPUTER NETWORKS

A Computer network refers to a collection of two or more computers (NODES) which are connected together to share information and resources [2]. Internet is the physical computer network (Computer, Monitor, Modem, Cables, Phonelines)

### A. What Is World Wide Web (WWW)

The inventor of WWW is Tim Berners-Lee in the year 1991. This web is a system of Internet Servers that supports the specially formatted documents.

### B. Why Computer Networks

Networks are used because of their Performance, Reliability and Security. They are the means to converge the two areas. A borderless communication and information environment can be built only with the help of Networks [3].

### C. Reasons for Using Computer Network and Its advantages

**1. Resource Sharing:** It is possible to share all programs data and other resources. All the information gets stored in server in turn this server sends the web page to the computer web browser.

**2. High Reliability of Communication:** It is achieved by having alternate sources of resource supply. The important files could be replicated so that in case of hardware failure other copies could be used.

**3. Cost Effective:** Networking allows sharing of resources.

**4. Mode of Communication:** Using network two or more user can communicate from distinct locations not necessary that they should be under a common roof.  
Example: Teleconferencing.

**4. Electronic Messaging:** One of the most used application of network is that one can send mails in fraction of seconds without any writing materials.<sup>[1]</sup>

#### D. Applications of Computer Networks

- Business Promotor
- Marketing And Finance
- Directory And Information Services
- Manufacturing
- Email Services
- Mobile Applications
- Teleconferencing.

### TYPES OF NETWORKS

Based on the geographical area covered, networks are classified into following types.

- Local Area Network(LAN)
- Metropolitan Network(MAN)
- Wide Area Network(WAN)



#### E. Disadvantages of Networks

- Viruses-It can spread to other computers through networks.
- Computer hacking-It is hazardous happening particularly because of WAN.
- Breakdowns and possible loss of resources – breakdown may lead to loss of important data of the server.
- Expensive to build - cables and other hardware equipments are at a higher price to buy and replace.
- Security threats- It is possible for the hackers to steal the valuable data of large companies for their own benefits.<sup>[4]</sup>

#### Latest Technology Brought In Data Communication and Networks

5G- It is the latest network brought in which address the network congestion, energy efficiency, cost, reliability and connection to billions of people and devices with faster speed.

#### Virtualization, SDN & NFV

In 2015, the adoption of open stack, open day light, opNFV for software and services and open compute for hardware will support more virtualized, open source network computing platform and architecture.

#### Smarter Smartphones, Connected Sensors

Beyond smart phones, tablets, connected sensors and body-worn wearables will also make headlines. Connected sensors will find their way into vehicles (SMARTCARDS), into urban areas (SMARTCITIES) and into our infrastructure (SMART GRID).[5]



## CONCLUSION

Networks provide us all facilities to communicate with one and another in an effective manner. It has also reduced the work of manpower. It has also connected the entire world into single entity by connecting one and another from far distances. It is an easy way of communication and data exchange between two compatible devices.

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