IT 606 Computer Networks (CN)

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1. **Evolution of Computer Networks & Application Layer.**

2. **Transport Layer & Network Layer.**

3. **Routing & Data link Layer.**

4. **Physical Layer**

Text Book

1. **Networks for Computer Scientist & Engineers**:- **Youlu Zheng** & **Shakil Akhtar**.

2. **Computer Networking –A Top –Down Approach- Featuring the Internet**:- **James F. Kurose** & **Keith.W.Ross**.

Reference:

1. **Computer Networks** :- **Andrew.S.Tanenbaum**

Module-1

Evolution of Computer Networks & Application Layer.

Computer Networks

Computer Networks

- By computer network we means an **interconnected collection of autonomous computers**.

- The term **autonomous** implies that the **computers can function independent of others**.

- Two computers are said to be **interconnected** if they are able to **exchange information**.

- A Computer Network is " A set of data processing nodes that are **interconnected for the purpose of data communication**".

- Network is a group of computers joined with each other **to share data and information to perform a particular predefined task**.

Importance of Computer Networks

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1. Only with the help of computer networks can a **borderless communication** and **information environment be built**.

2. Computer Networks allow the **user to access remote programs** and **remote databases** either of the same organization or from other enterprises or public sources.

3. Computer Networks provide **communication possibilities <u>faster than </u>other facilities**.

Why build a Network ?

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There are lot of reason for building networks,

1. Networks **enable communication**.

2. They **increase efficiency**.

3. Network **can bring together diverse ideas and issues into a common forum**.

4. Networks help **ensure that information is redundant** , **that it exists in more than one computers at a time**.

Basic Requirements for a Networks

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In order for a network to function, it must meet **three** **basic requirements**.

1. It must **provide connection**

2. It must **provide communication**

3. It must **provide services**

1. **It must provide connection**

- Connection refers to the hardware.

2. It must provide communication

- Communication is the way in which the **devices talk to each other**.

3. **It must provide services**

- Services are the things **which are shared with the rest of the network**.

<u>Aim of Computer Networks are</u>

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1. Data Sharing

2. Resource Sharing

3. Network Security

1. Data Sharing

- Sharing of data files stored in local disk of one computer.

- This data can be accessed from other computer present on either same network or different network.

2. **Resource Sharing**

- Resource on network like printer **can be accessed from other computer** for taking printouts .

- This features **reduces the cost** of making the resources physical available on every computer.

3. Network Security

- Main feature of network is **to restrict the unauthorized access of the resources on the network.**

Network Criteria

Network Criteria

A network must be able to meet a certain number of criteria such as

1. **Performance**

2. **Reliability and**

3. **Security**

1. Performance

It can be measured in many ways, including

1. **Transit time and**
2. **Response time**

1.Transit time :- is the **amount of time required for a message to travel from one device to another**.

2. **Response time** :- is the elapsed time between an inquiry and a response.

The performance of a network depends on

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The performance of a network depends on

1. **number of users,**

2. **the type of transmission medium,**

3. **the capabilities of the connected hardware and**

4. **the efficiency of the software.**

2. **<u>Reliability</u>**

- In addition to accuracy of delivery, **network reliability is the measured by** the frequency of failure , the time it takes a link to recover from a failure **and** the network's robustness in a disaster.

3. **Security**

- It includes **protecting data from unauthorized user or access**.

Network Functions

Network Functions

1. **Way to transfer information on a link** :- signal format
2. **Addressing** :- identify sender and receiver.
3. **Routing** :- find a path between sender and receiver.
4. **Buffering** :- compensate for differences in speed variations in traffic load.
5. **Error detection and control**:- if data is lost or corrupted.
6. **Congestion Control**.

Thank You