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DEPT - ECE

SEM – 6TH

SEC – A

SUBJECT – COMPUTER

NETWORK

[EC- 602]

TOPIC NAME – INTRODUCTION

OF DATA COMMUNICATION

Introduction

- Welcome to the world of data communication. An overview of the foundations and principles that drive modern connectivity.
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Data Communication Basics

- Understanding the transmission of data across various networks. The role of protocols and data packets in efficient communication.

Types of Data Communication

- Exploring wired and wireless communication methods. The benefits and limitations of fiber optics and radio waves in data transmission.

1892 Canadian Government starts regulating telephone system

1910 US Government begins to regulate telephone system

1915 Transcontinental and transatlantic phone service begins

1951 Direct-dialed long distance service begins

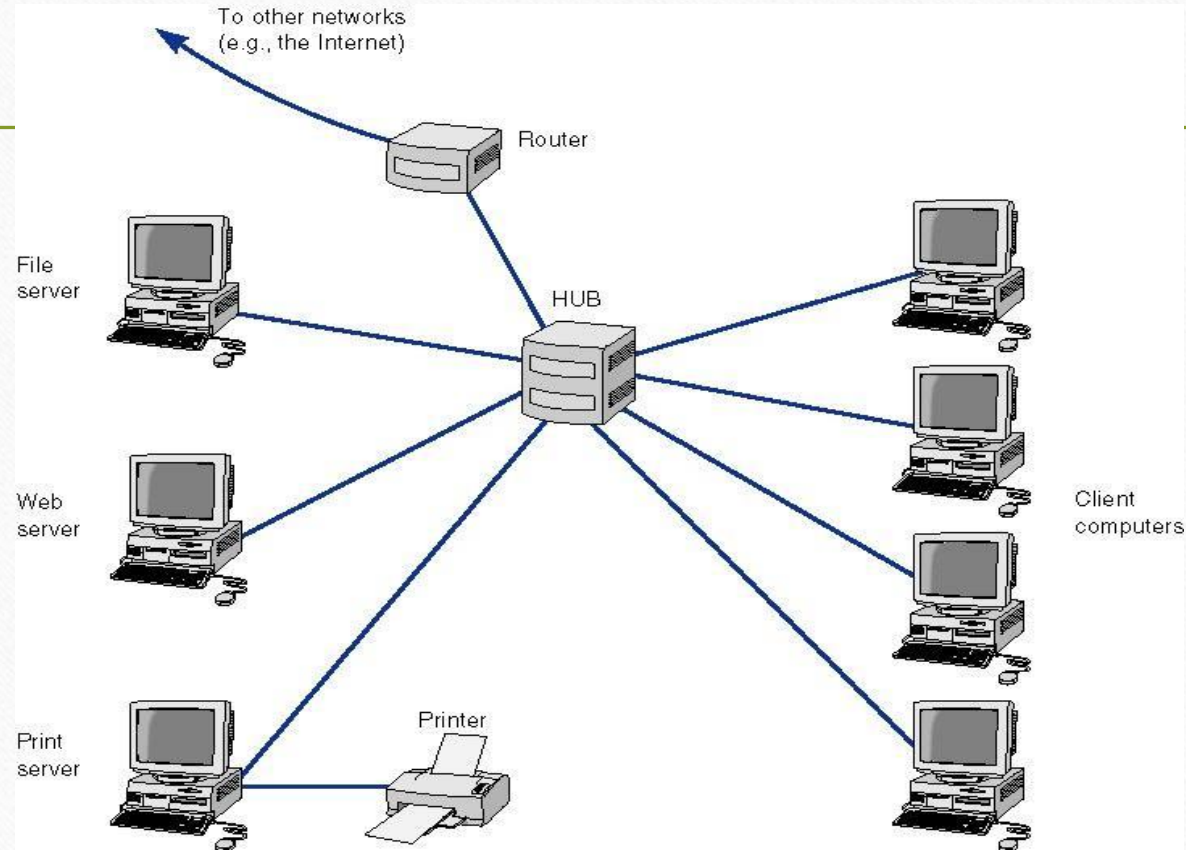
1962 Telstar satellite starts relaying international phone calls



Datacom Basics

- Data Communications: the movement of computer information from one point to another by means of electrical or optical transmission systems (called networks).
- Telecommunications: broader term that includes the transmission of voice and video, as well as data, and may imply longer distances.
- Although once considered separate phenomenon, telecom & datacom are in the process of “converging” into a single “broadband” communications technology

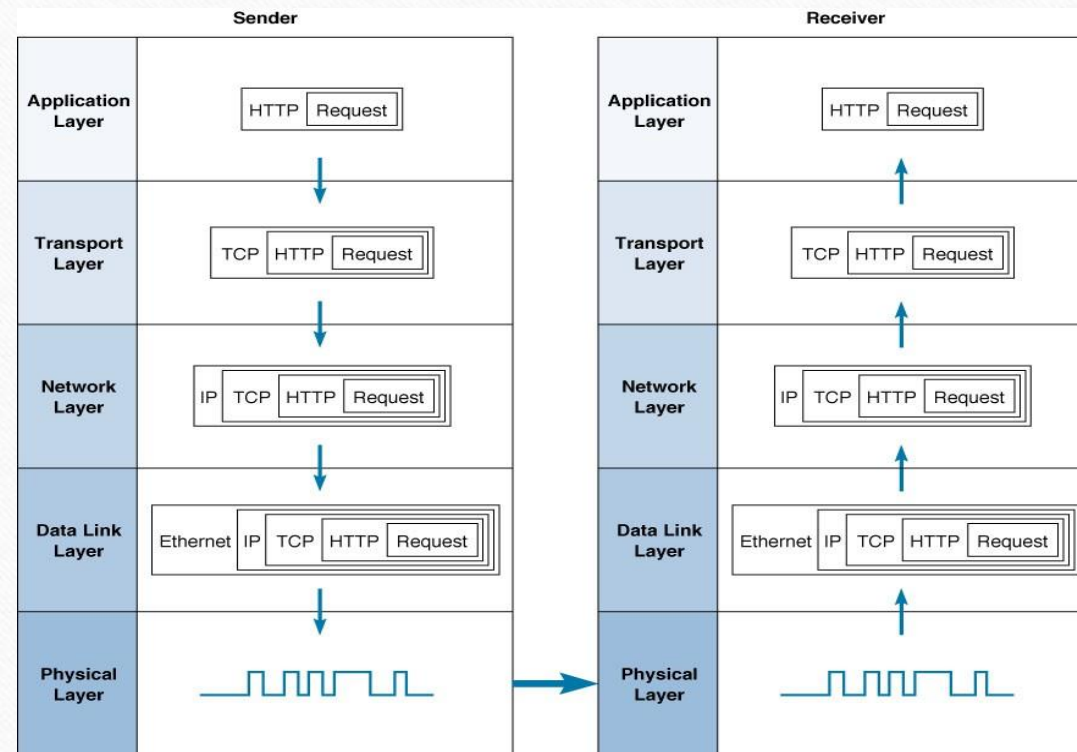
Components of a Network



Network Models

| OSI Model | Internet Model | Groups of Layers |
|-----------------------|----------------------|----------------------------------|
| 7. Application Layer | 5. Application Layer | <i>Application Layer</i> |
| 6. Presentation Layer | | |
| 5. Session Layer | | |
| 4. Transport Layer | 4. Transport Layer | <i>Internetwork Layer</i> |
| 3. Network Layer | 3. Network Layer | |
| 2. Data Link Layer | 2. Data Link Layer | <i>Hardware Layer</i> |
| 1. Physical Layer | 1. Physical Layer | |

Message transmission using layers



Networking Example: clicking on a WWW hyperlink

- Clicking on a hyperlink starts an HTTP request-response cycle. First, the user's browser sends an HTTP request.
- The HTTP request is then handed to the transport layer's TCP protocol and placed in a TCP segment.
- The TCP segment is placed in an IP (network layer) packet.
- The IP packet is next placed in a Data Link layer (such as Ethernet) frame and sent out over the network media as a series of 1s and 0s defined by the physical layer.
- On the web server, this process occurs in reverse, each layer removing the overhead information added by each layer until the HTTP request is finally produced for the server to read.
- The server then sends an HTTP response back to the client which is sent back to the user's browser.

Wireless Communication Standards

- Examining Wi-Fi, Bluetooth, and 5G standards. Their impact on mobile connectivity and Internet of Things (IoT).

Data Communication Trends

- Exploring the impact of 5G, edge computing, and blockchain on data communication. Embracing innovation and future possibilities

Challenges and Opportunities

- Navigating the challenges of data communication including security risks and bandwidth limitations. Embracing the opportunities for global connectivity and digital transformation.

Conclusion

- Reflecting on the evolution and significance of data communication.
Emphasizing the vital role in shaping the digital world

THANK YOU
