



**ACIT 2620**

# **Principles of Enterprise Networking**

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# Objectives

- Overview of networking concepts and terminologies
- Layered networking model
- Project introduction
- Packet capture

# What is the internet

- What is it made of?
- what is its purpose?
- How does it work?

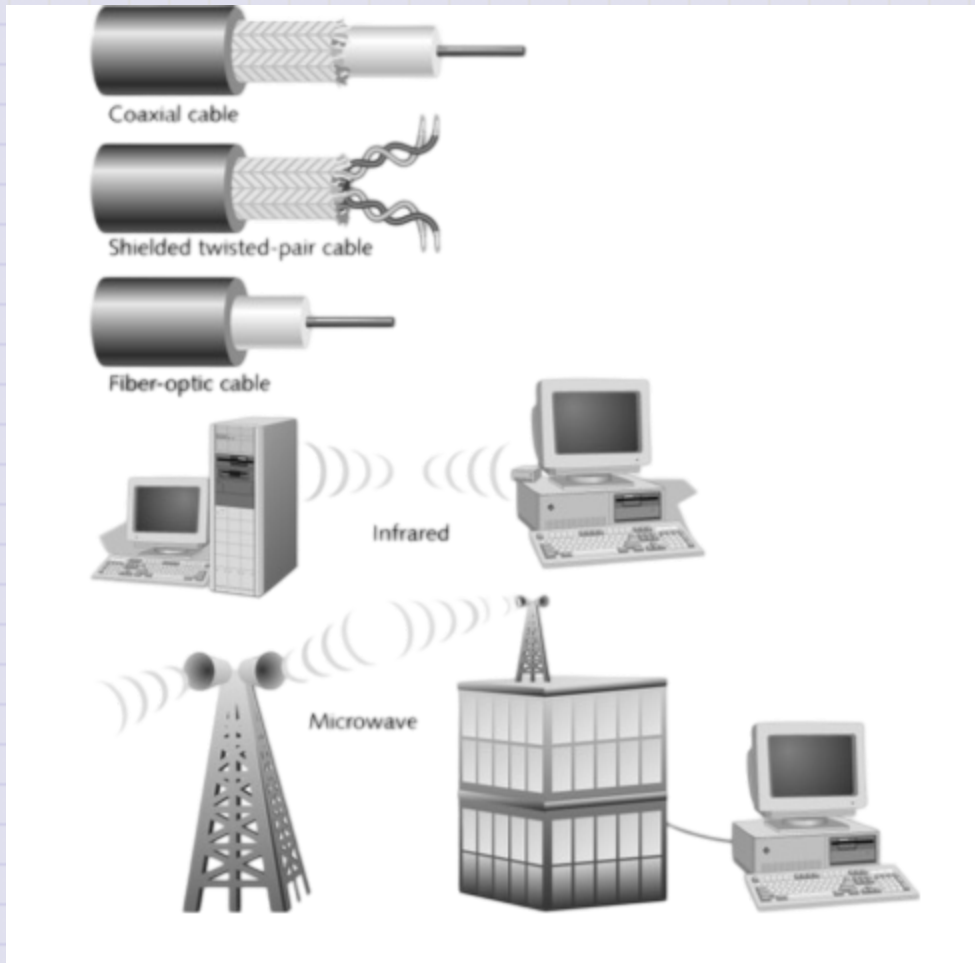
# Network

Collection of **nodes** connected by some type of transmission media or **link** , for the purpose of sharing services, devices or data (i.e. networked **resources** )

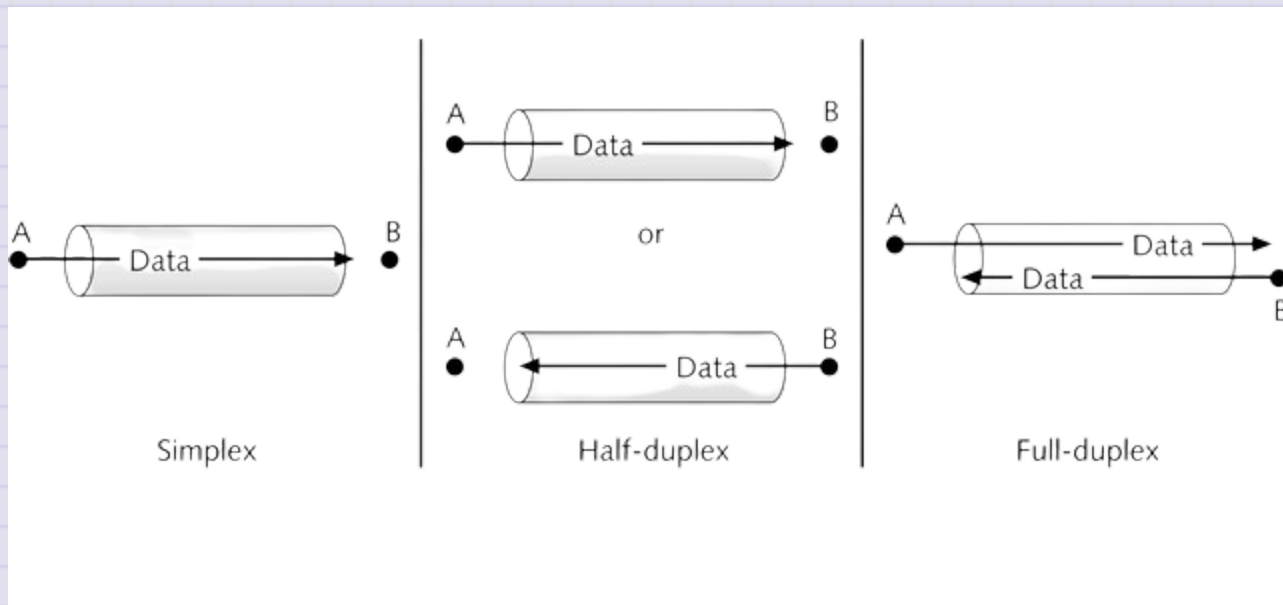
# Node

Any device that can communicate over the network and is identified by a unique identifying number, known as its `network address` .

# Link



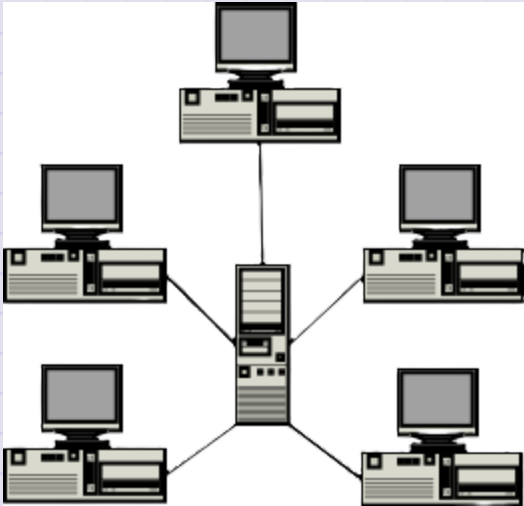
# Media concurrency and direction



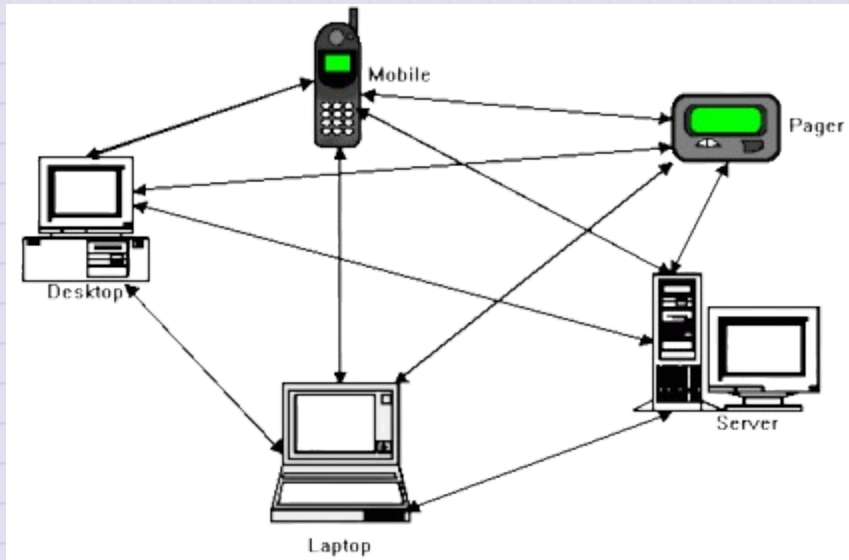
# Resource Control



# Client-server Networks



# Peer-to-peer Networks



# Types of Networks

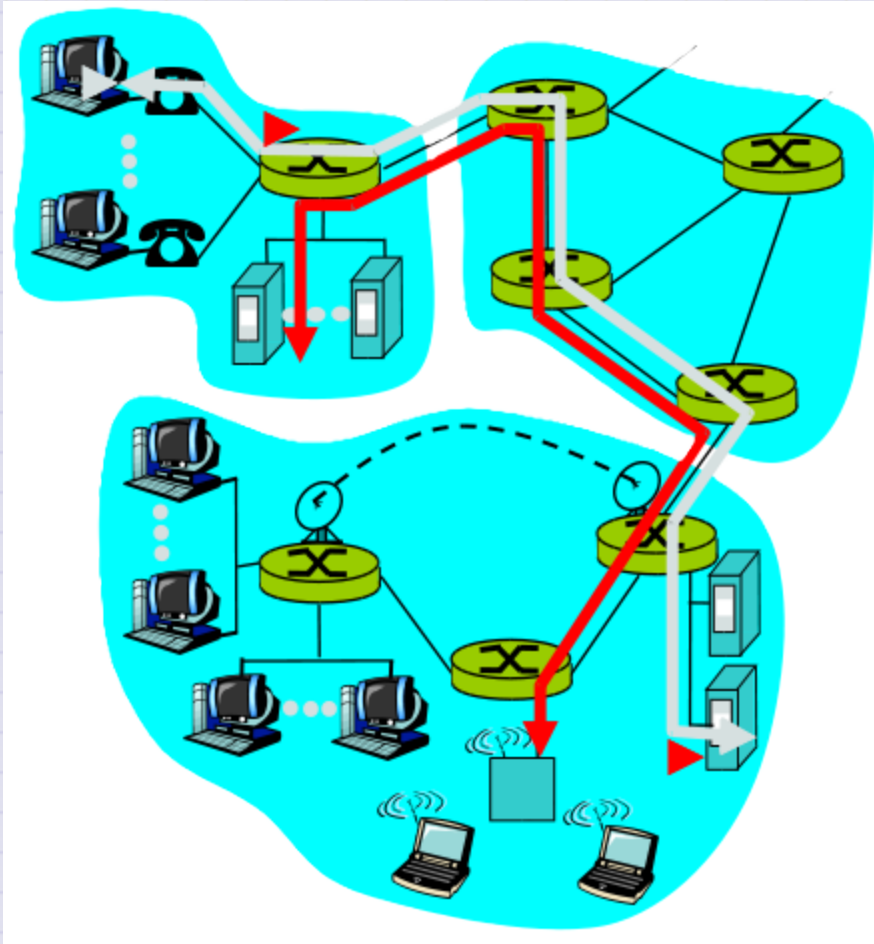
- LAN
- WLAN
- PAN
- CAN
- MAN

- WAN
- SAN
- EPN
- VPN

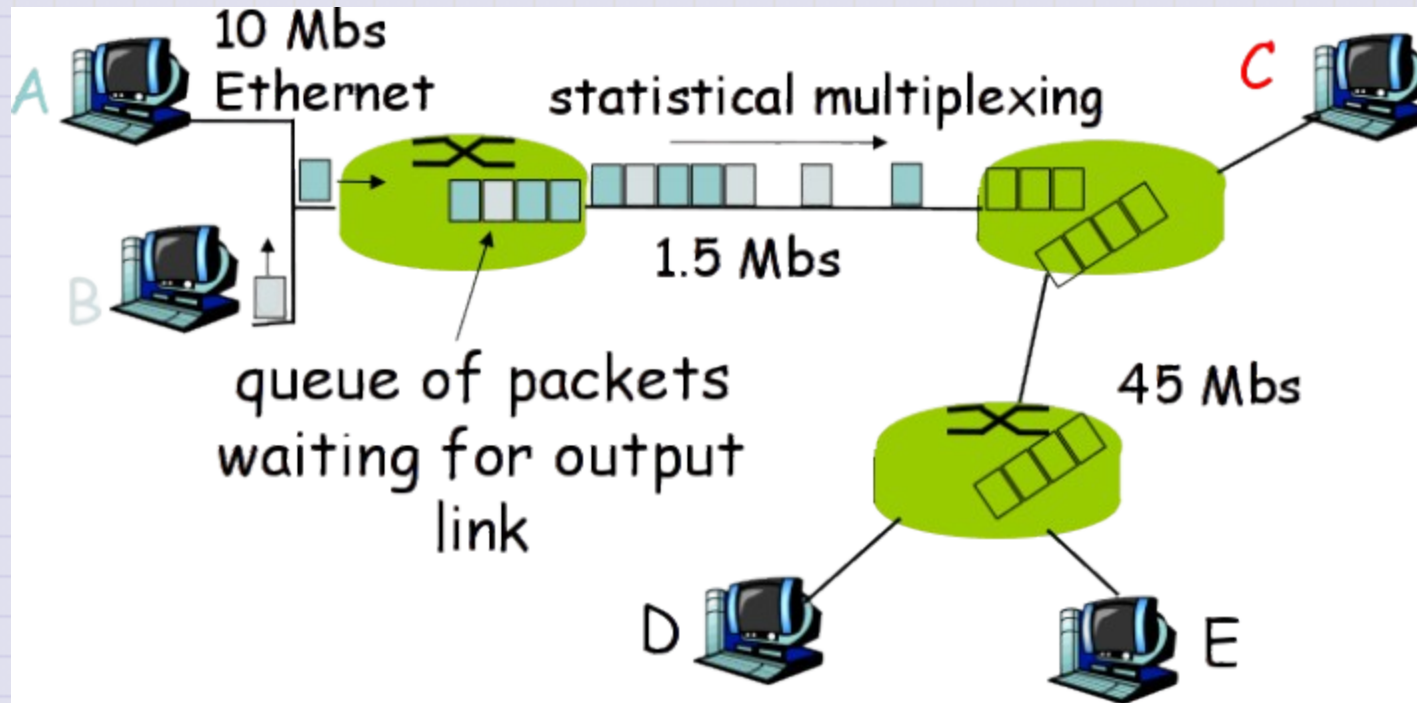
[Learn more](#)

# Switching Methods

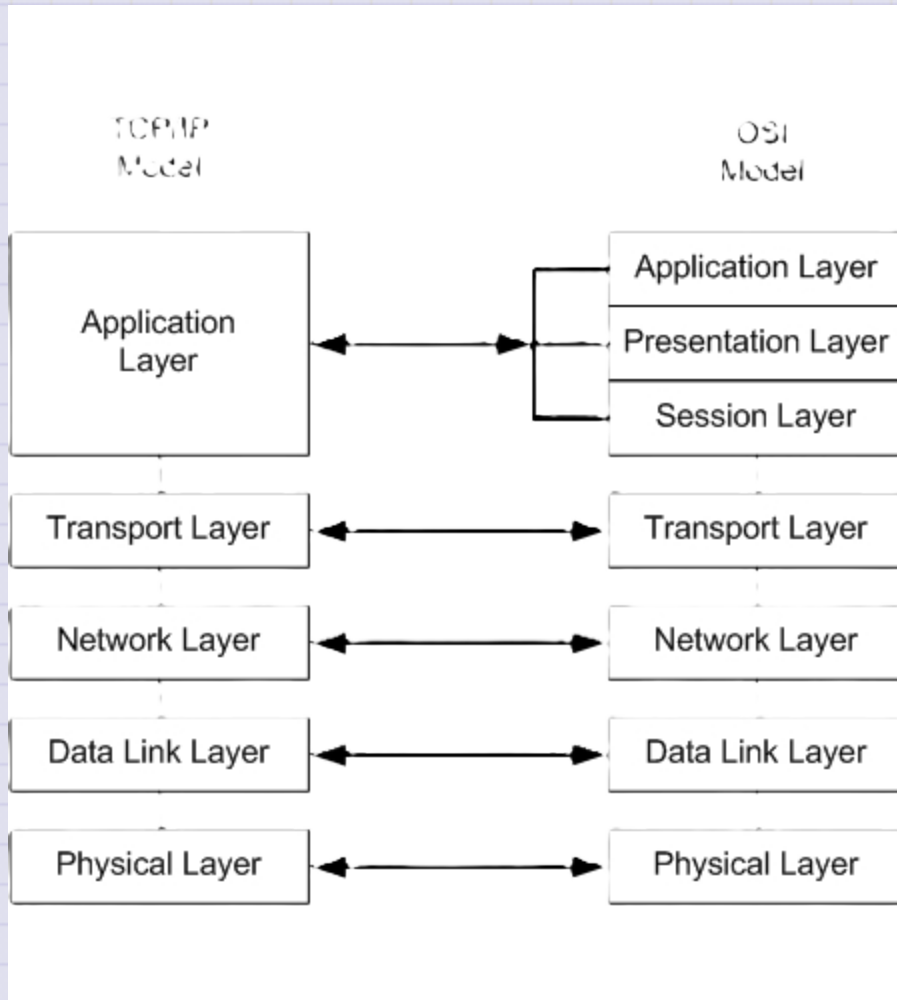
# Circuit Switching



# Packet Switching



# Layered networking model

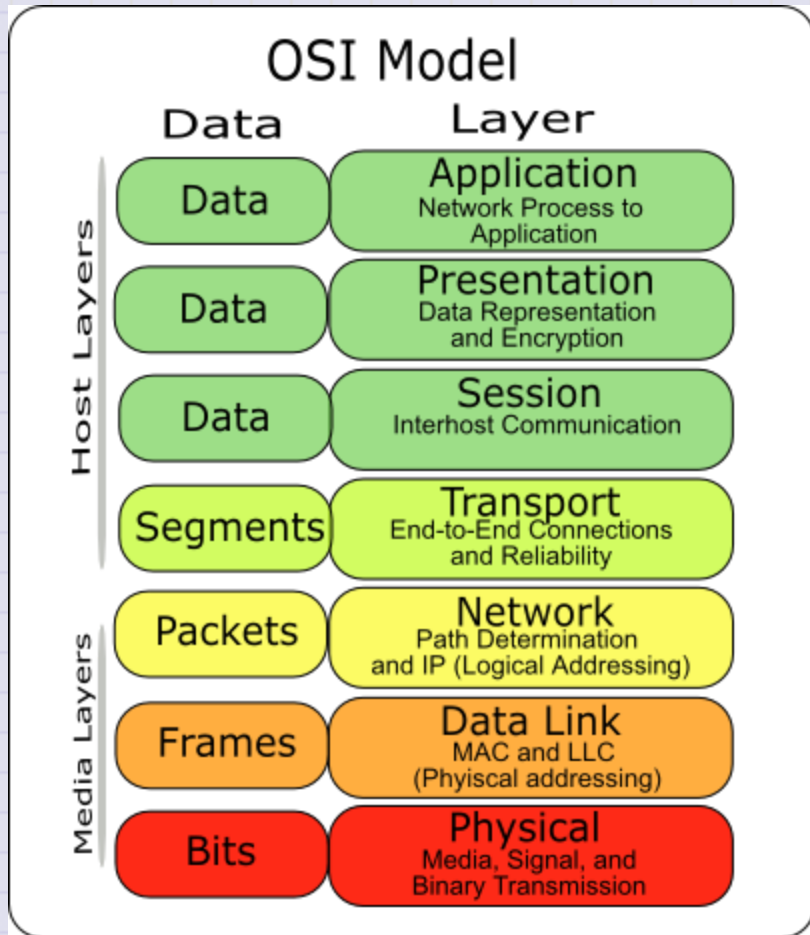




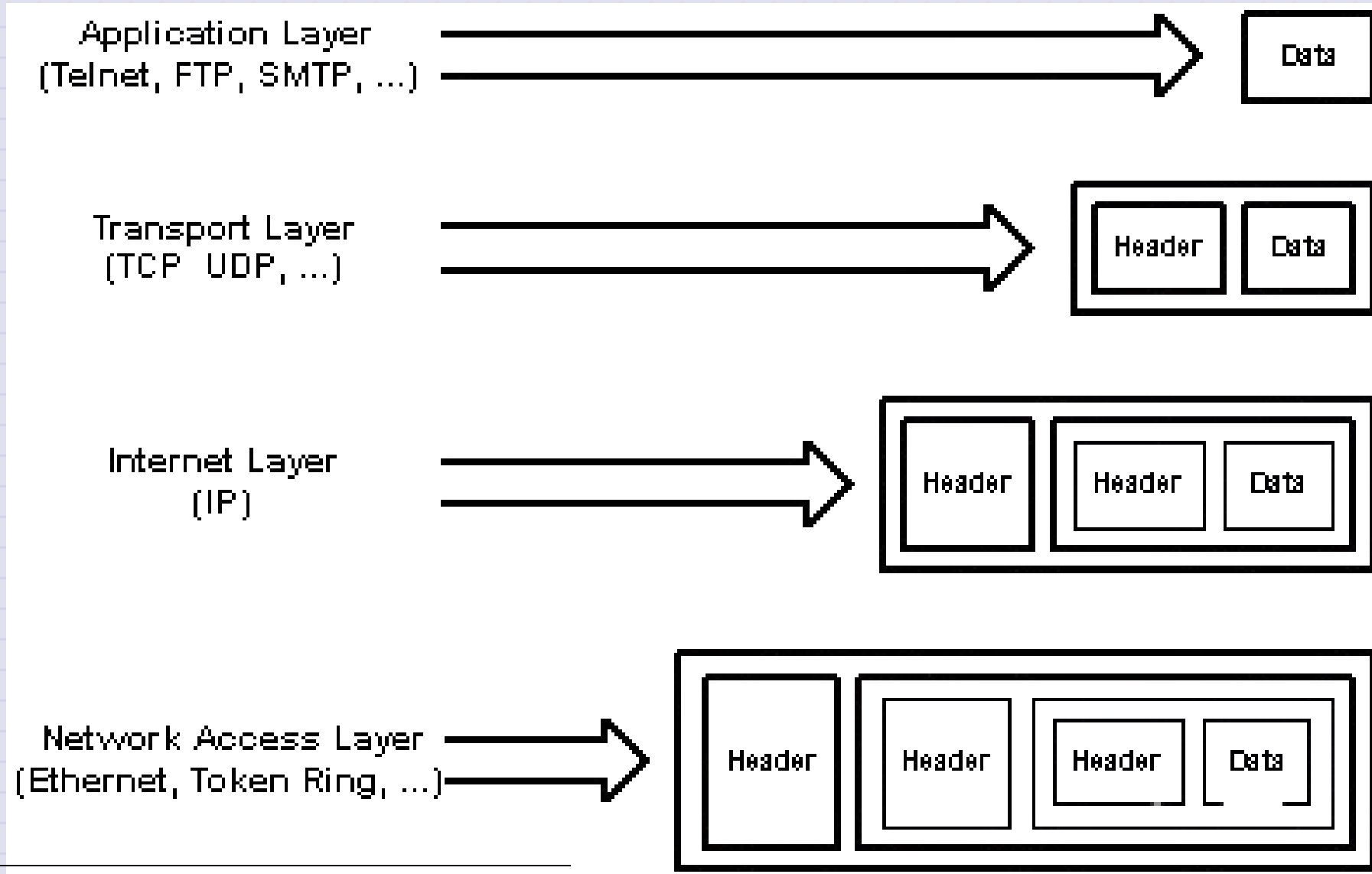
## Layered why?

- Managing complexity: explicit structure allows identification and makes explicit the relationship of complex system's pieces
- Modularization: changing of an implementation of a specific layer's service is hidden from the rest of the system

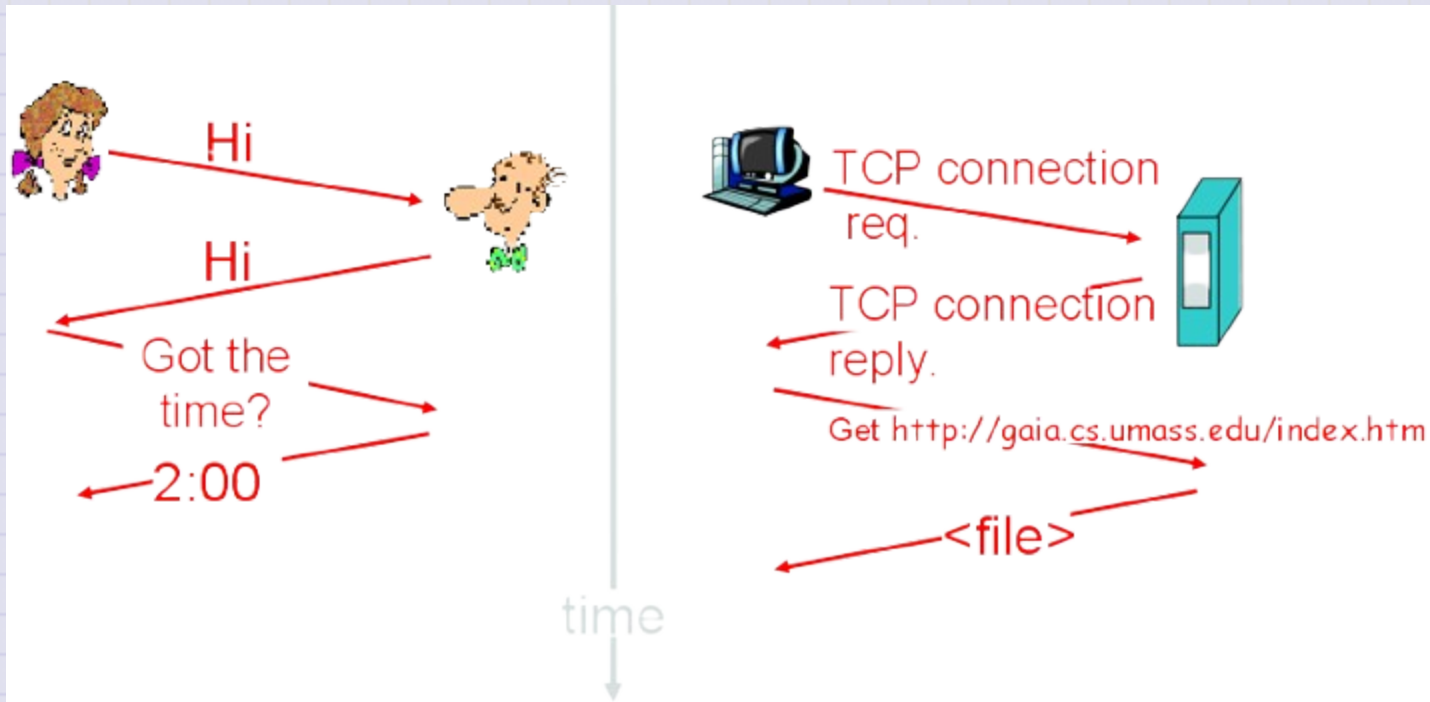
# Protocol Data Units (PDU)



# Encapsulation



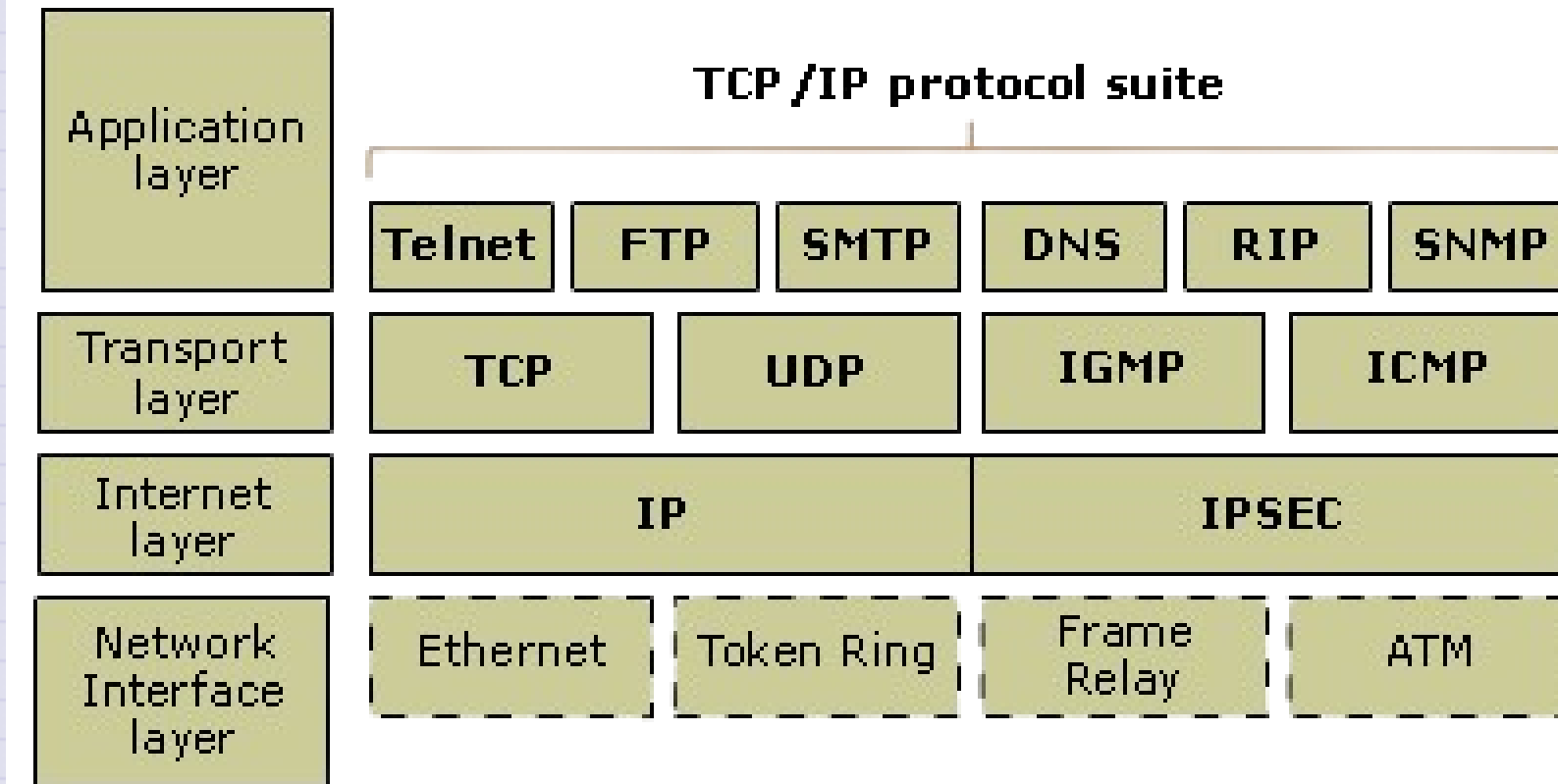
# Protocols



- Mutually agreed upon rules for communication
- Define the format, order of messages sent and received among network entities, and actions taken upon transmission, receipt, and timeout
- Govern all communication activity on the internet

# TCP/IP protocol suite

## TCP /IP model



# Wireshark

- A tool for capturing network traffic for analysis
- [Grab the installer](#) and install it on your system

# Reading list

- This week
  - [OSI Model](#)
  - Optional reading:
    - [Wireshark: filtering while capturing](#)
    - [Capture filters](#)
    - [Display filters](#)



- Week Two (read/watch these before next class)
  - Common Network Infrastructure devices
  - Network devices
  - Network Topologies
  - Overview of networks
  - Optional (but highly recommended):
    - Linux command line (recommended for beginners)