



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?

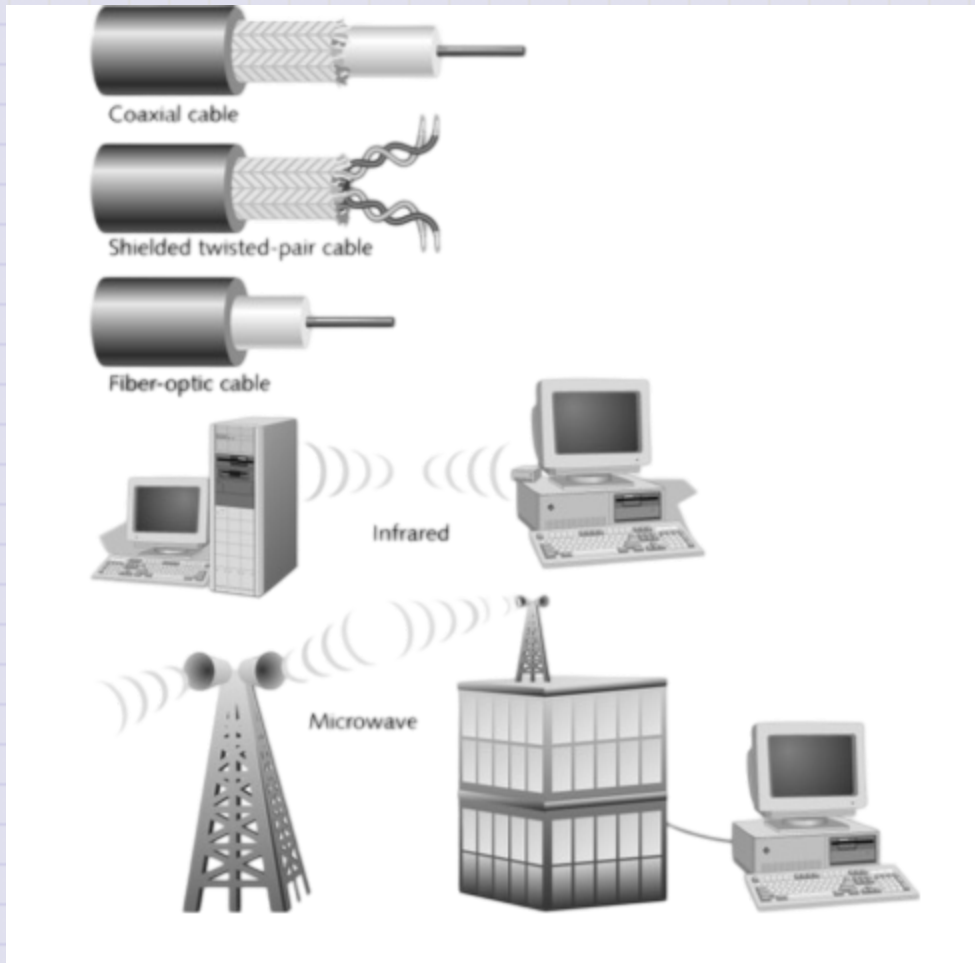
Network

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**)

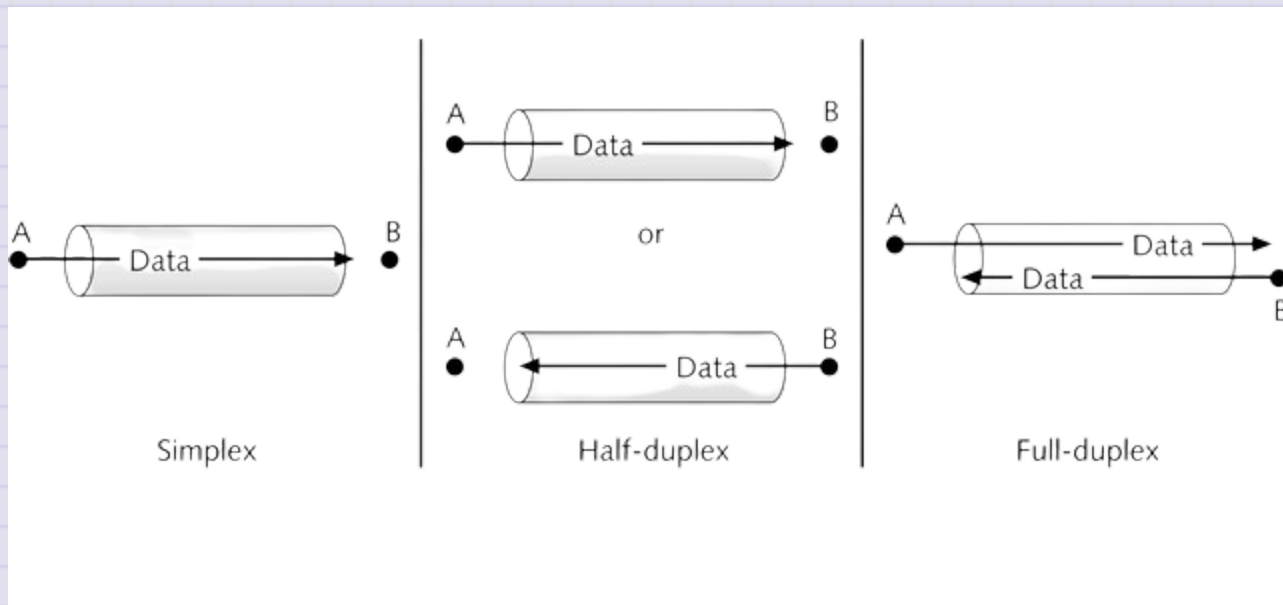
Node

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

Link

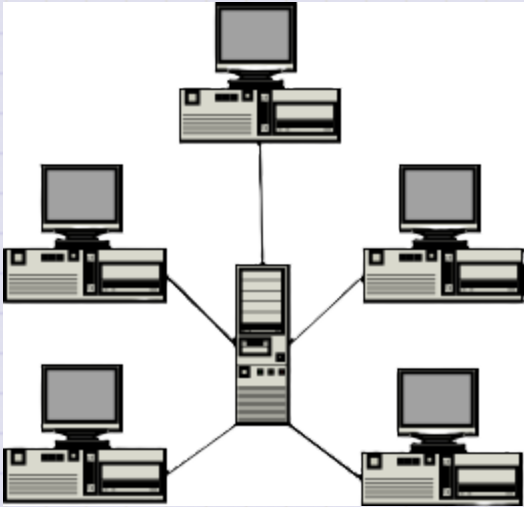


Media concurrency and direction

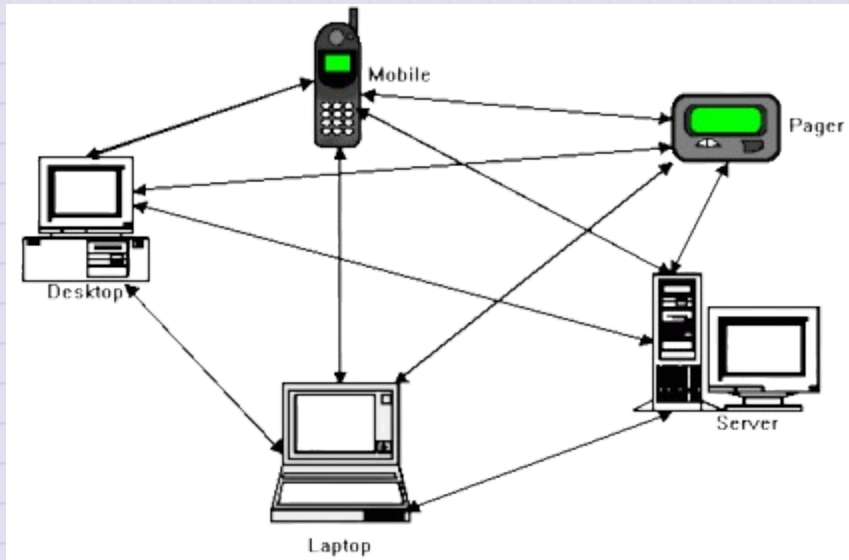


Resource Control

Client-server Networks



Peer-to-peer Networks



Types of Networks

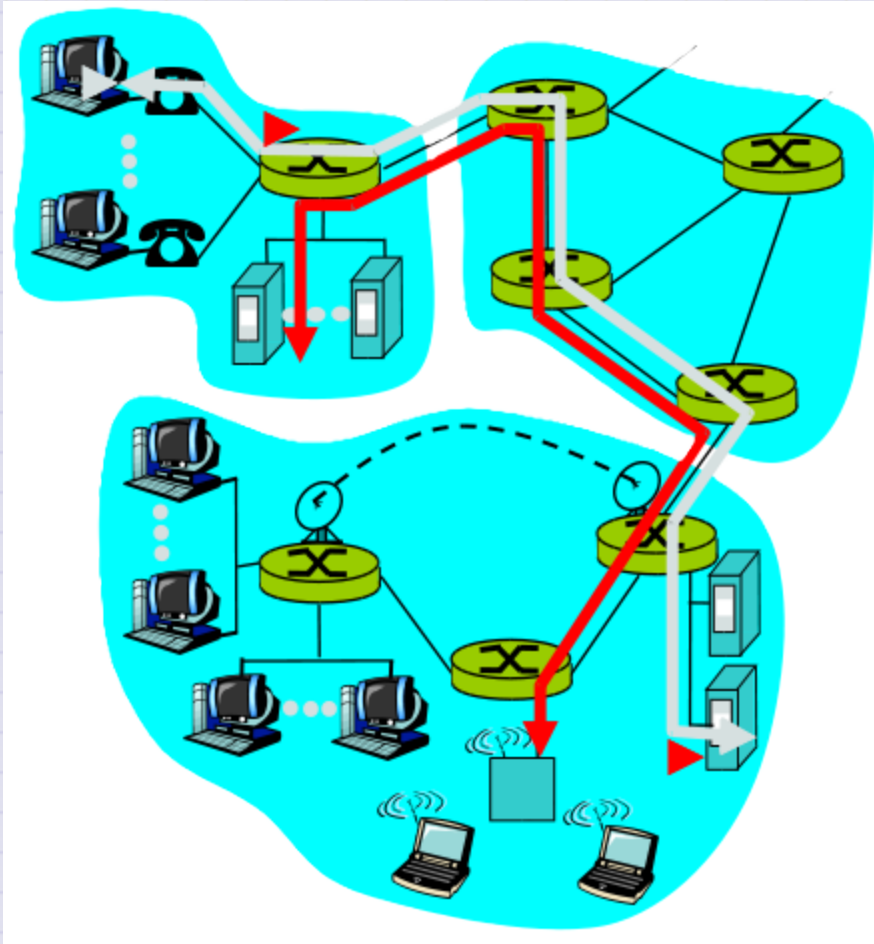
- LAN
- WLAN
- PAN
- CAN
- MAN

- WAN
- SAN
- EPN
- VPN

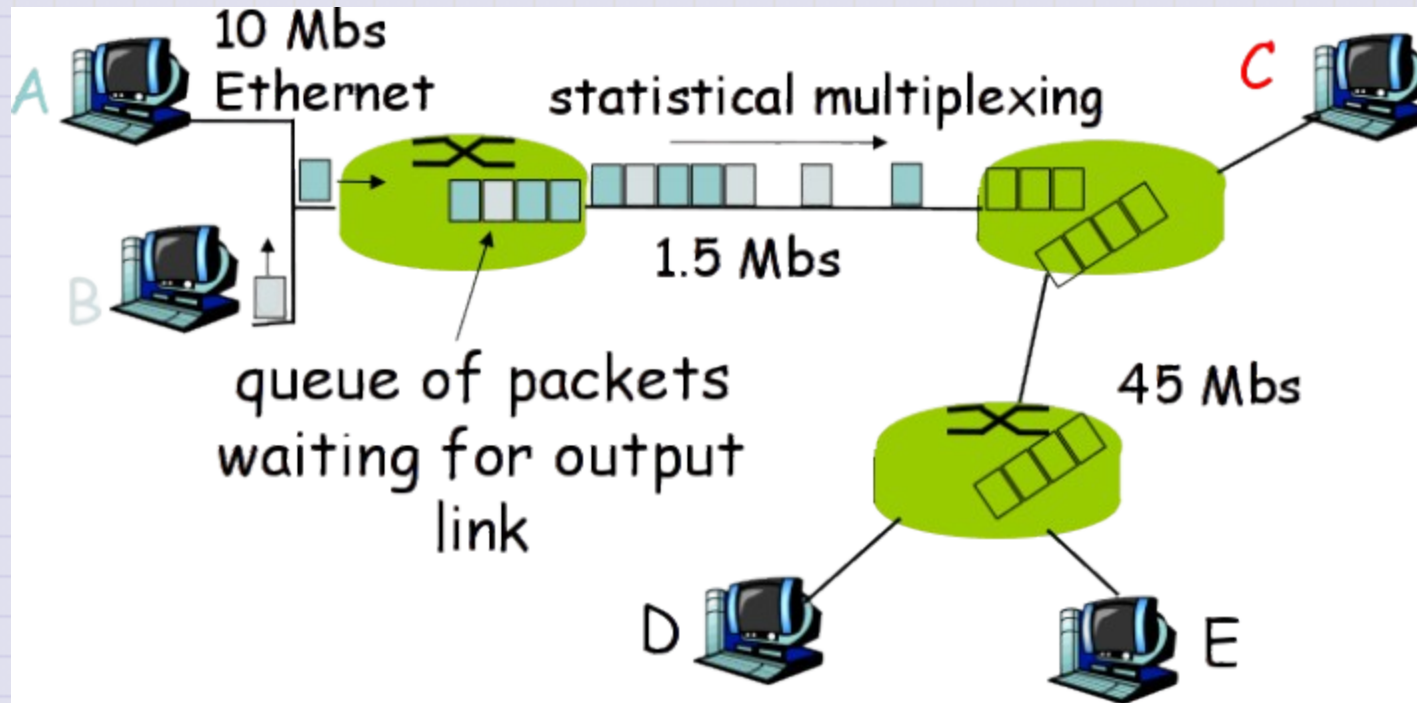
[Learn more](#)

Switching Methods

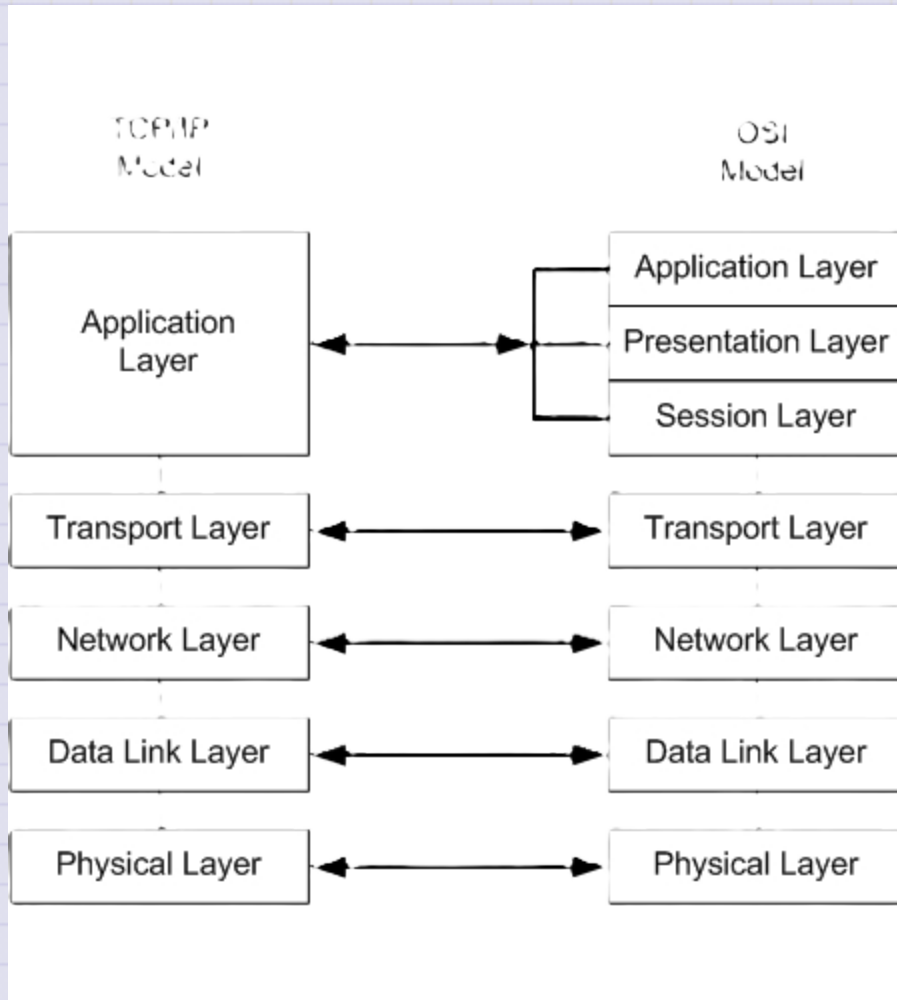
Circuit Switching



Packet Switching



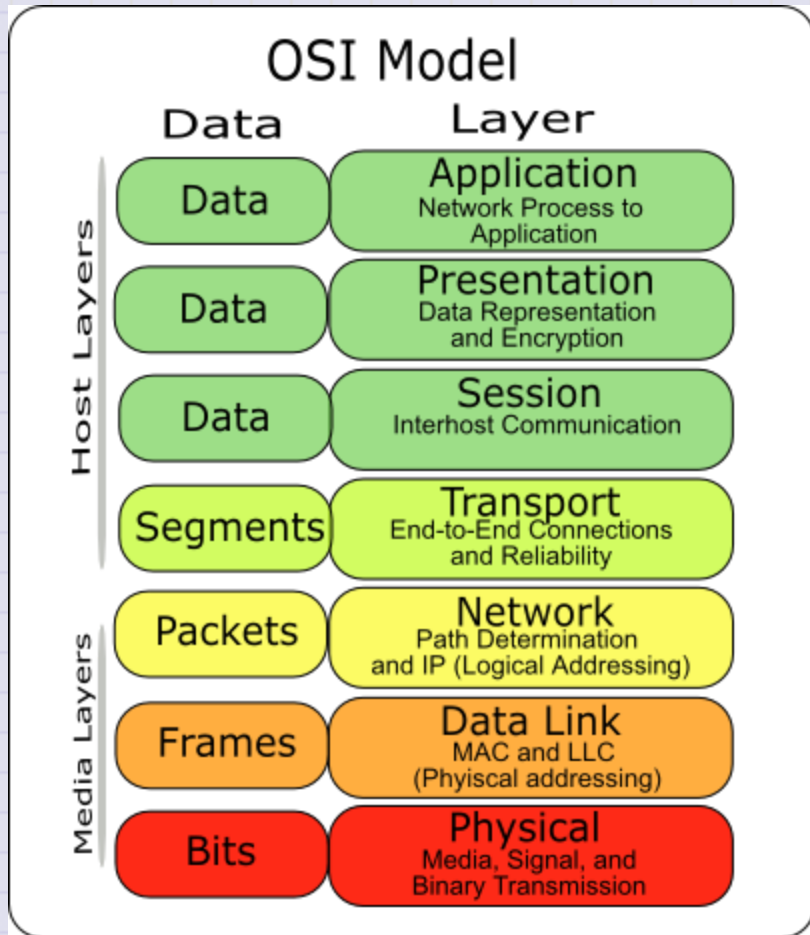
Layered networking model



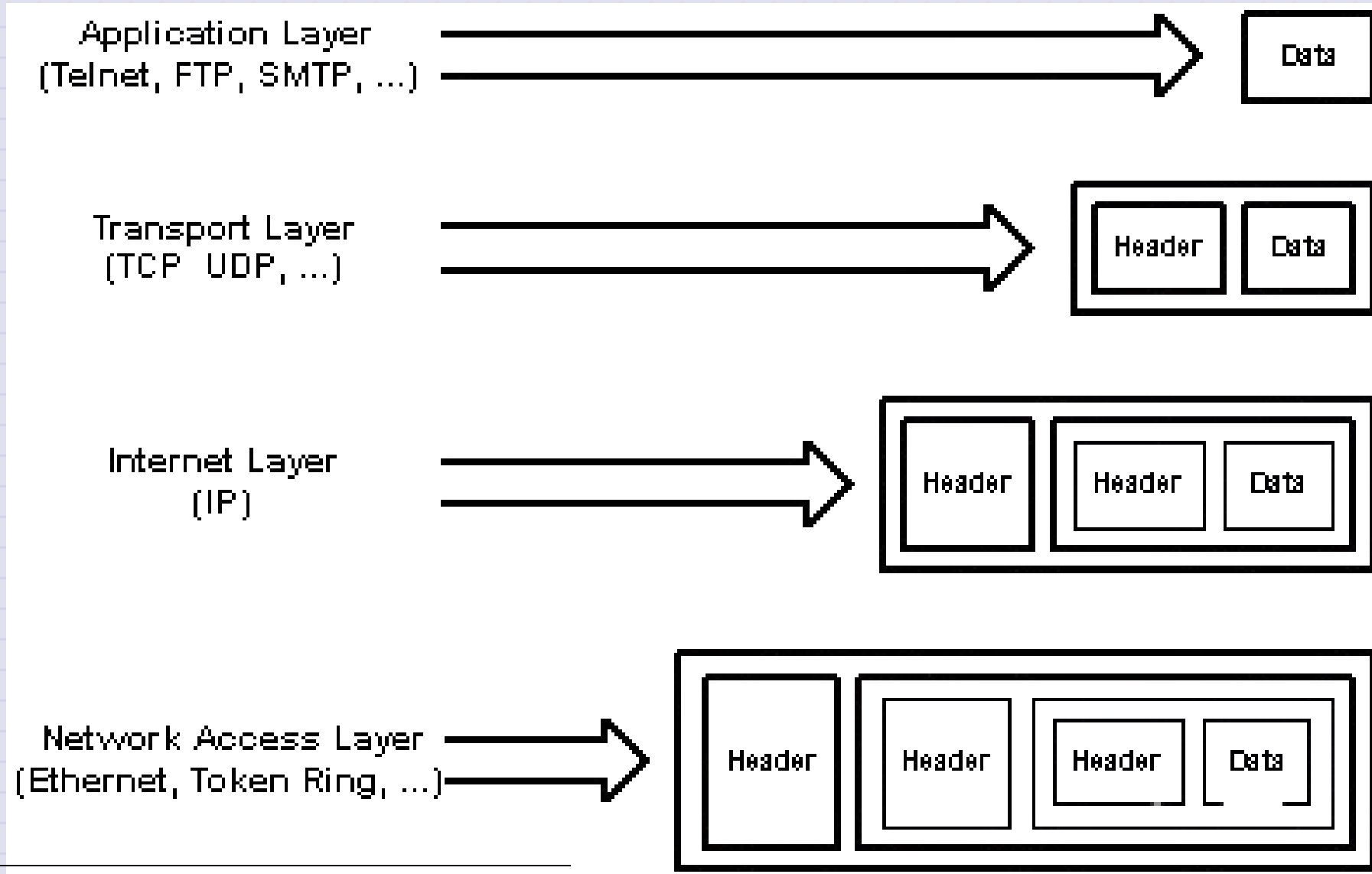
Layered why?

- 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

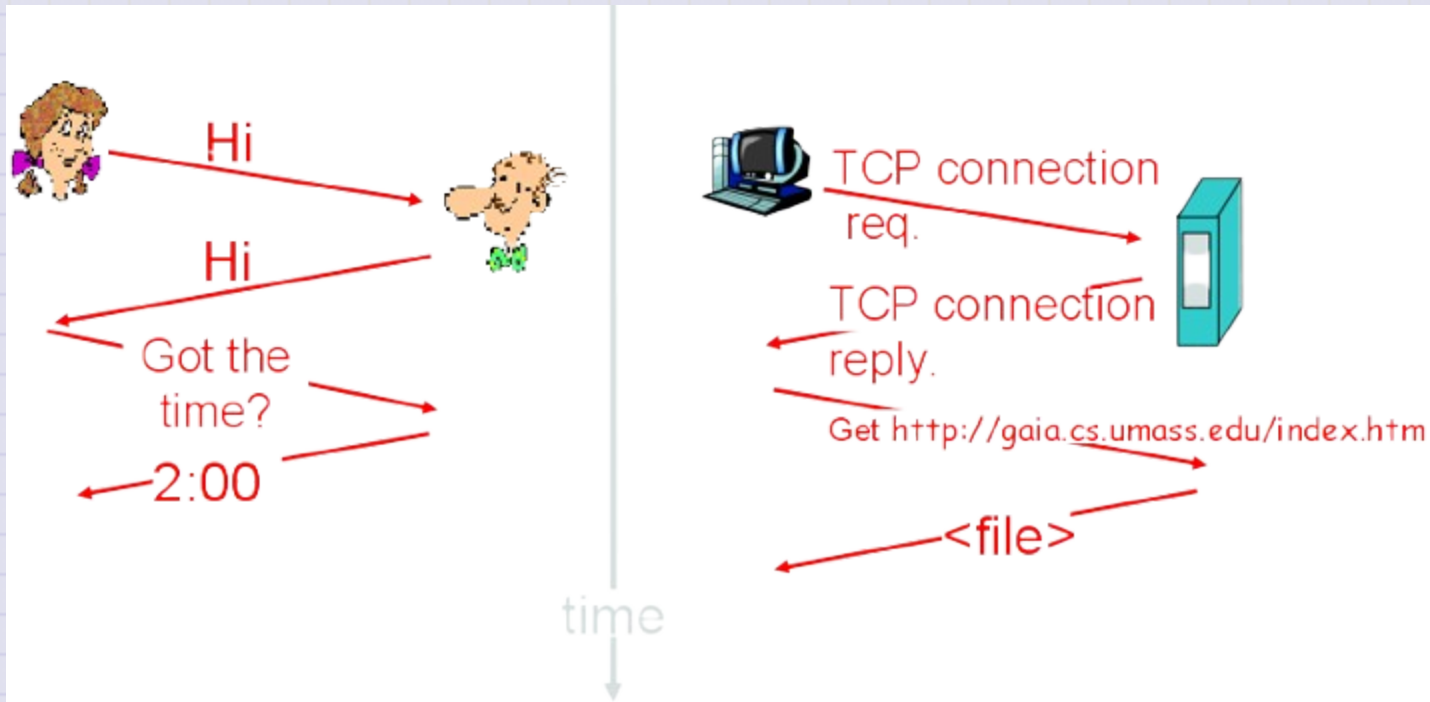
Protocol Data Units (PDU)



Encapsulation



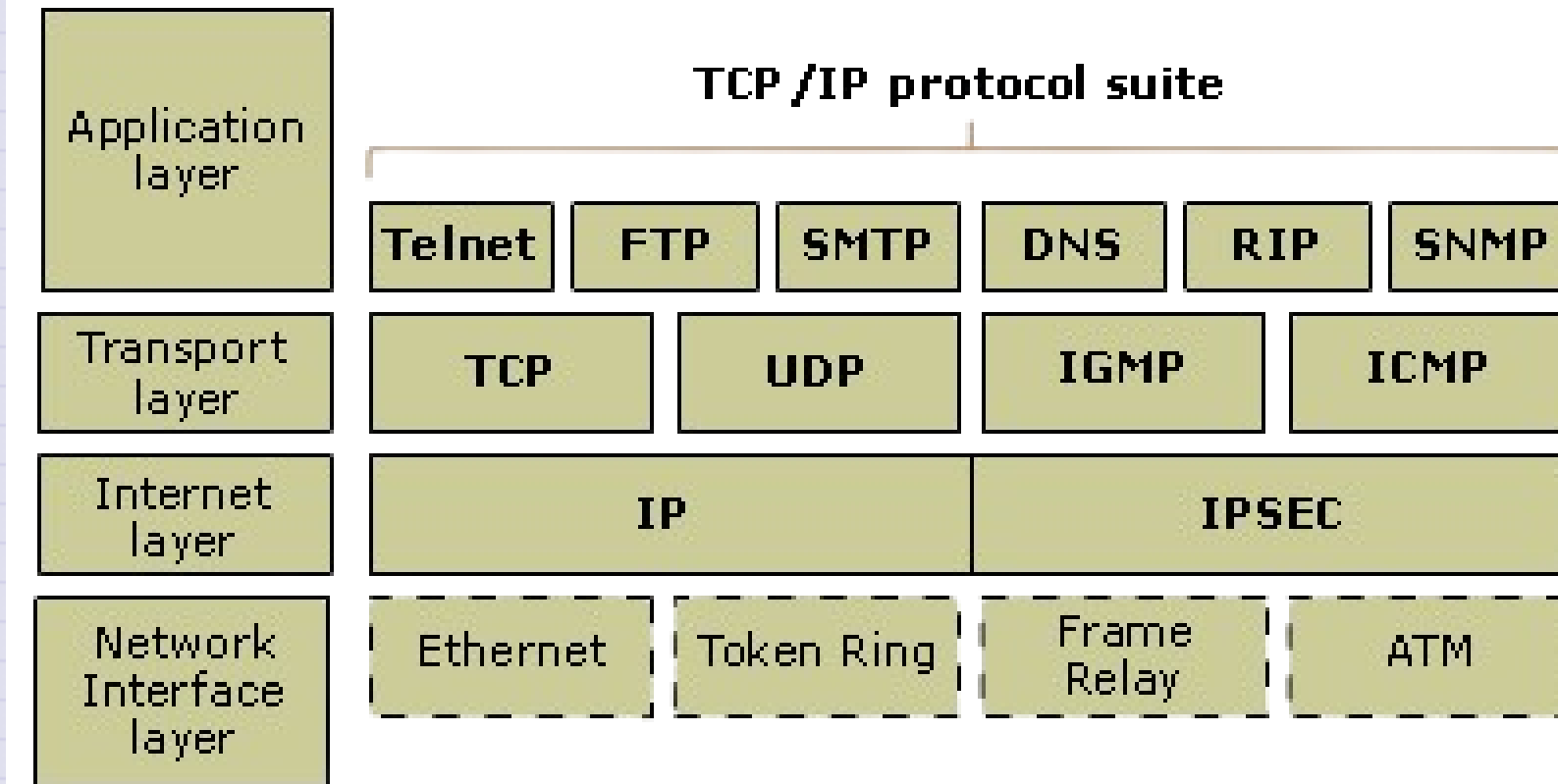
Protocols



- 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)