



## Local and Metropolitan Area Networks

- Local Area Networks (LAN)- Networks that optimized for a moderate-size geographic area, such as a single office building, a warehouse, or a campus.
  - low bit error rate and delay
- Metropolitan Area Networks (MAN) - Networks that optimized for a larger geographic area than a LAN, ranging from several blocks of buildings to entire cities.
  - bit error rate and delay higher than LAN
- Wide Area Networks (WAN) - Networks that optimized for connecting equipment separated by long distances, (hundreds or thousands of miles), typically use telephone lines leased from phone companies.
  - high bit error rate and delay.



## Baseband vs. Broadband

- Baseband LAN/MANs
  - Use digital signalling.
  - Signals are inserted on the line as voltage pulses and use the entire frequency spectrum.
  - Bi-directional transmission.
  - Limited distance, ~1km, (due to attenuation.)
- FDM Broadband LAN/MANs
  - Use Analog signalling.
  - Use FDM to divide whole bandwidth into channels.
  - Uni-directional transmission
  - Use active amplifier.



## Local/Wide Area Network Standards

Logical Link Control (LLC)	IEEE 802.2 -Unacknowledged connectionless service -acknowledged connectionless service -Connection-mode service					
Medium Access Control (MAC)	802.3 CSMA/CD	802.4 Token Bus	802.5 Token Ring	802.6 MAN (DQDB)	802.7? ATM BISDN	FDDI Token Ring
Physical Medium	baseband: 10 Mbps (2 versions); twisted pair: 1, 10 Mbps; broadband coaxial: 10 Mbps	broadband coaxial: 1,5,10 Mbps; carrierband: 1,5,10 Mbps; Optical fiber: 5,10,20 Mbps	shield twisted pair: 1,4 Mbps	broadband coaxial: T1,T3 1.5,44.5 Mbps optical fiber: STS-3C, 155 Mbps	optical fiber: 155,622 Mbps	optical fiber: 100 Mbps

Topology:

**BUS**

**Ring**

**Dual Buses**

**2-counter Rotating Ring**