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Basic Communications Channel Characteristics

- Simplex channel
- Half-duplex
- Full-duplex channel

Bandwidth

- The range of frequencies that an electronic signal occupies on a given transmission medium.

Broadband

- Telecommunications in which a wide band of frequencies is available to transmit information, allowing more information to be transmitted in a given amount of time.
Shannon’s Fundamental Law of Information Theory

- The information carrying capacity of a channel is directly proportional to its bandwidth - the broader the bandwidth, the more information that can be carried.

Types of Media

- Twisted-Pair
- Coaxial Cable
- Fiber-Optic Cable
- Microwave Transmission

Twisted-Pair Wire Cable

![Twisted-Pair Wire Cable](Source: Fred Bodin)

Coaxial Cable

![Coaxial Cable](Source: Fred Bodin)

Fiber Optic Cable

![Fiber Optic Cable](Source: Microsoft Image Phile)

Microwave Transmission

![Microwave Transmission](Source: Microsoft Image Phile)
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Carriers and Services

- Common carriers
- Value-added carriers
- Switched and dedicated lines
- Phone and dialing services
- Digital subscriber line (DSL)
- T1 Carrier

Network Concepts and Considerations

- Network topology
  - Ring network
  - Bus network
  - Hierarchical
  - Star network
  - Hybrid network
- Network types
  - Local Area Networks
  - Wide Area Networks
  - International networks
  - Home and small business networks
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Electronic Data Interchange (EDI)

Dr. Martin Hepp

Thank you!
Any questions? Please send an e-mail to mhepp@computer.org!

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