

# CS2105 CheatSheet

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## Internet

- The Internet is a network of connected computing devices
- Devices are known as **hosts** or **end systems**
- Hosts run network applications (like browsers) and communicate over links

### Network Edge (Access Network)

- Hosts access the Internet through **access network**
- eg Home/ Institute access networks

### Wireless Access Network

1. Wireless LAN (WIFI): Short range (100 ft)
2. Wide-area wireless access (3G/ 4G): Long range (10s km)

### Physical Media

- Host connect to access network via physical media - Guided media: signals propagate in solid media (ethernet cable/ fibre optics)
- Unguided media: signals propagate freely (radio)

### Network Core

A mesh of interconnected routers

Data transmitted by

1. Circuit Switching: dedicated circuit per call
2. Packet Switching: data sent through net in discrete "chunks"

### Circuit Switching

End-to-end resources **allocated to and reserved for** "call" between source and dest

- call setup required
- circuit-like (**guaranteed**) performance
- circuit segment idle if not used by call
- used in traditional telephone networks
- limited capacity

### Packet Switching

Host sending function

- breaks application message into smaller chunks, known as **packets** of length **L** bits
- transmits packets onto the link at **transmission rate R**
- link transmission rate is known as **link capacity** or **link bandwidth**

Packet Transmission Delay =  $\frac{L}{R}$ , assuming packet size  $L$  bits and link bandwidth  $R$  bits/sec

**Store and Forward**: entire packet must arrive at a router before it can be transmitted on the next link (check packet integrity; if corrupted, drop packet)