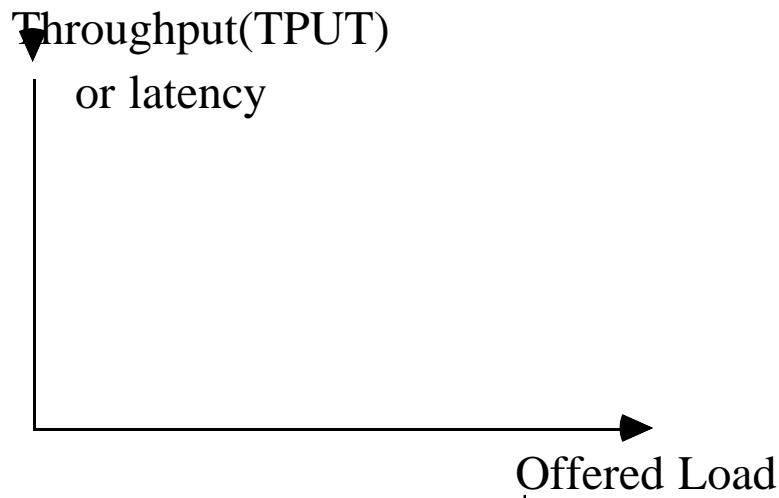


Lecture 2

- New terms:
 - QOS
 - Traffic
 - Bandwidth (highest - lowest frequency used for transmission)
 - Data rate, transfer rate
 - Throughput, latency, propagation delay



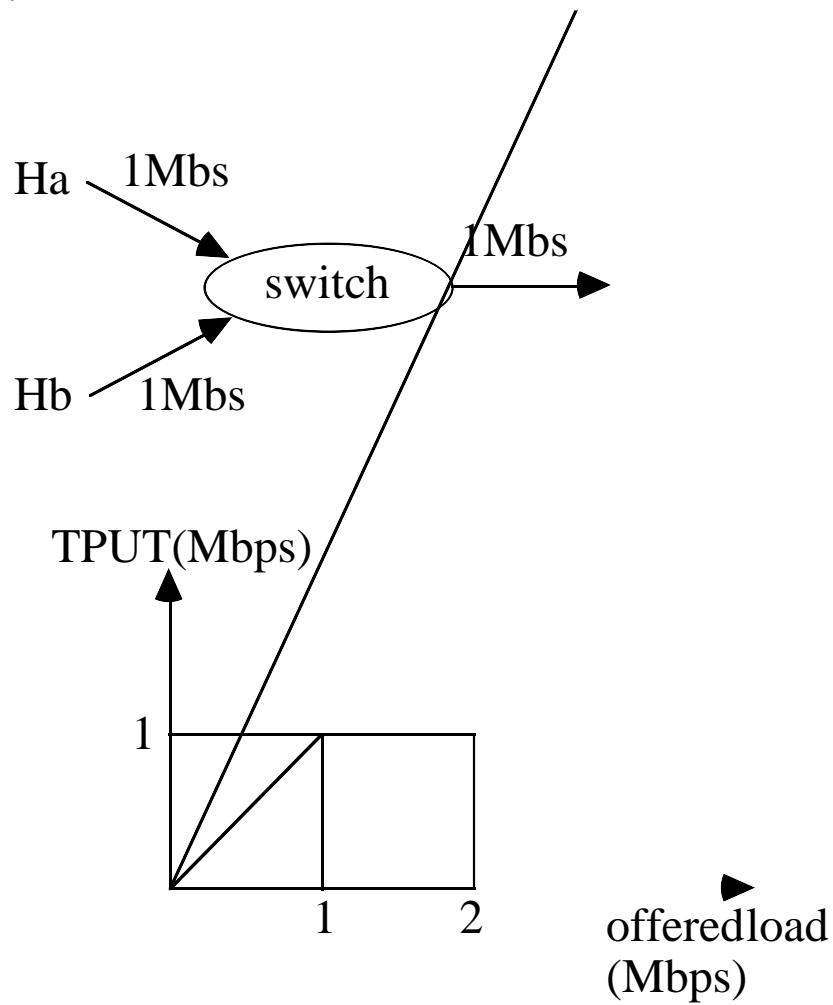
What would the graph look like for a point-to-point link?
For a multi-access medium?

- Aggregate Traffic
- Source, Destination

- Half, Full Duplex

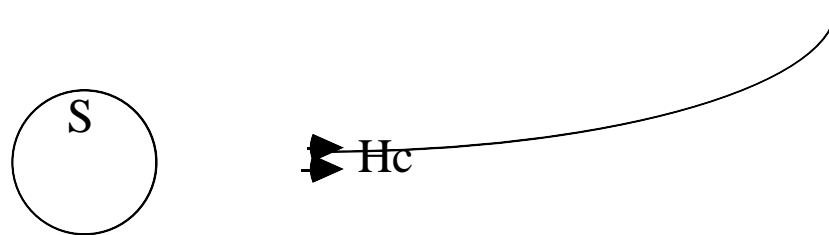
- Comparison of circuit & packet switching

Consider:



Suppose that: H_a and H_b have a constant stream of $1/2$ Mbps traffic:

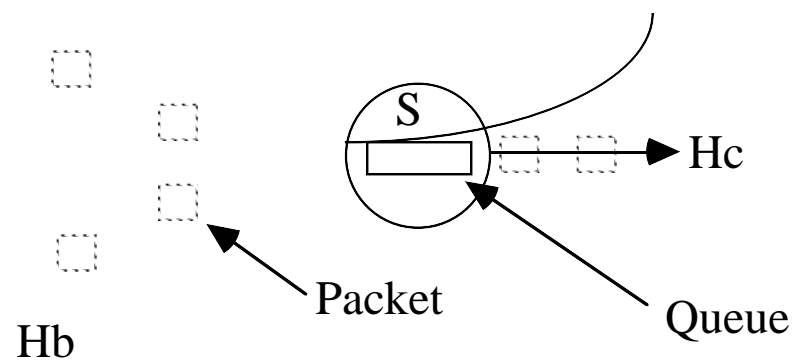
H_a



H_b

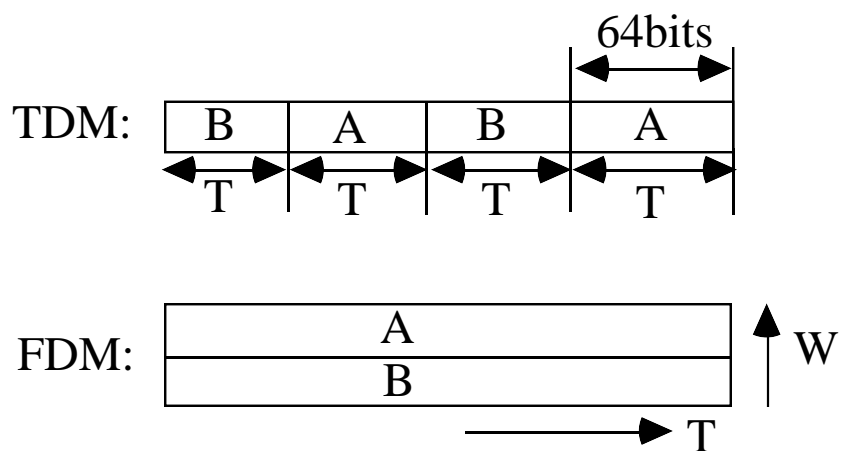
Circuit Switching

H_a



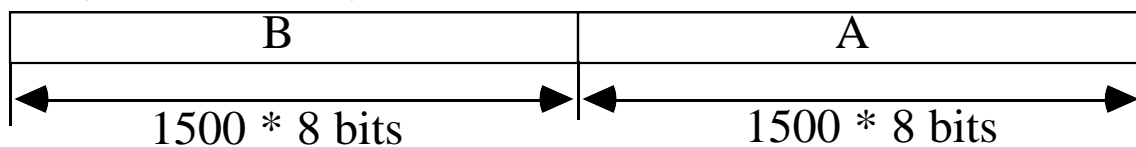
Packet Switching

How do they compare at the physical layer?



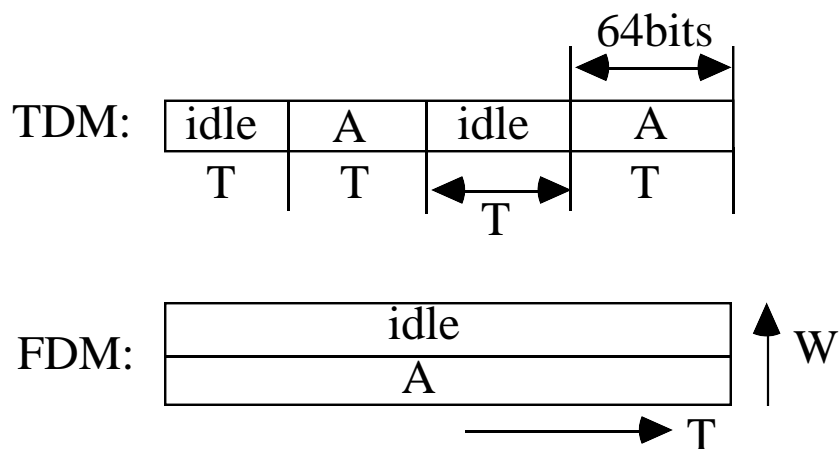
CircuitSwitching

PS (over Ethernet):

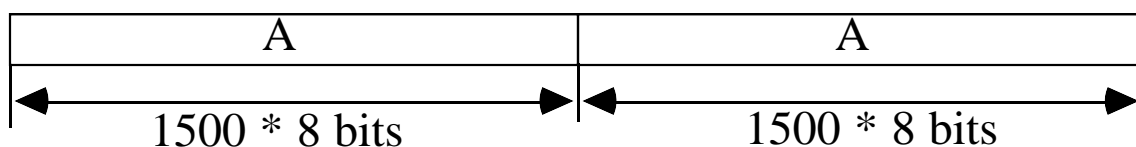


Packet Switching

Now suppose H_a has 1 Mbps to transmit, and H_b has nothing to transmit:



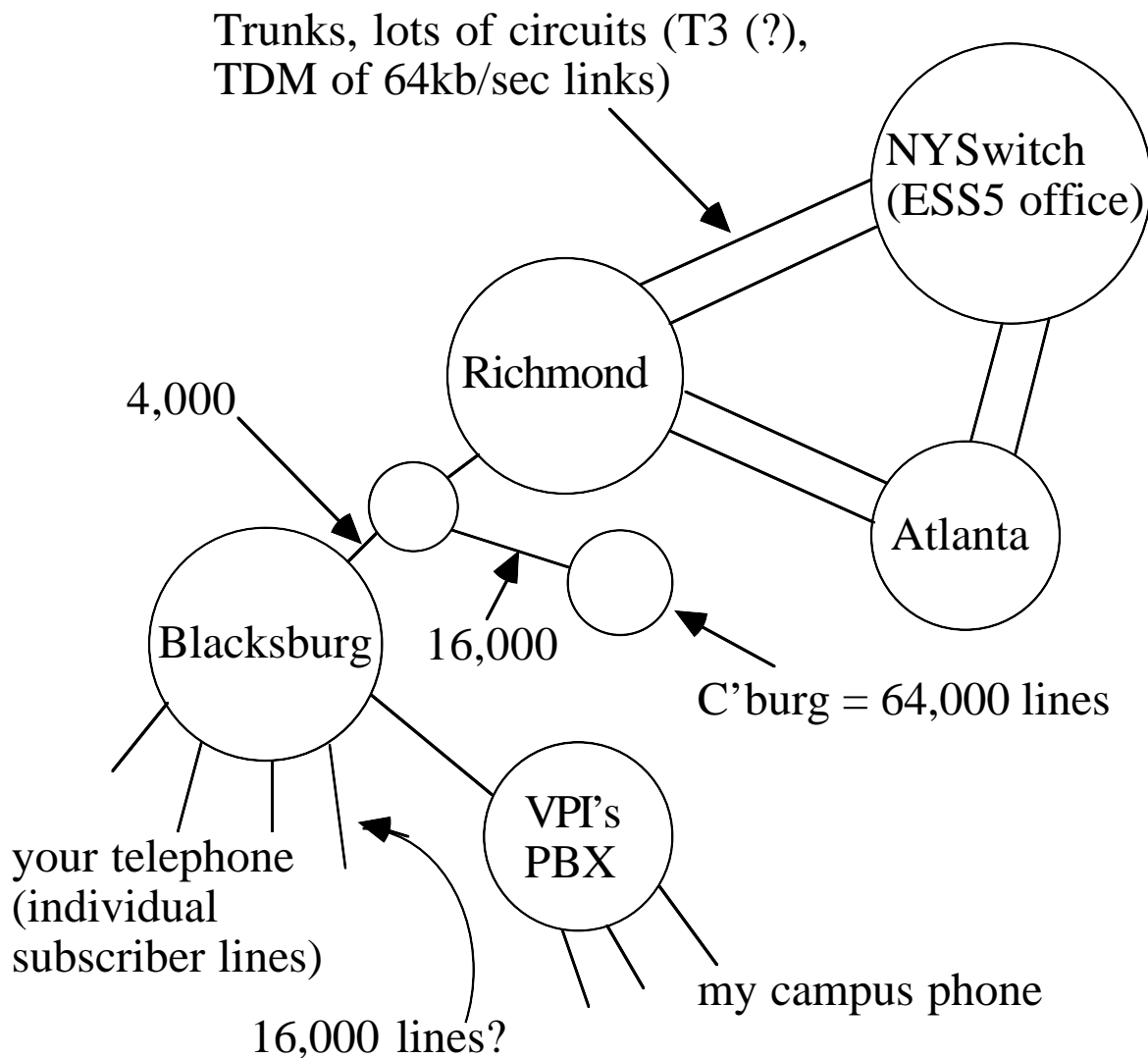
CircuitSwitching



Packet Switching

Morale: Packet switching does **NOT** waste any bandwidth!

- Example of a circuit switched network (Telephone system)



Note that:

- you will get a busy signal on call placement if >4000 people in Blacksburg call a non-Blacksburg number.
- the load to New York can be balanced at call placement time (may take Richmond -> Atlanta -> New York route)

Also discuss:

- packet vs. message switching
- dynamic (datagram) routing vs. virtual circuit routing:

Virtual circuit has

- fixed path for all packets, chosen at connection establishment time
- possible reservation of resources (e.g., buffer space or network bandwidth) on the selected path