

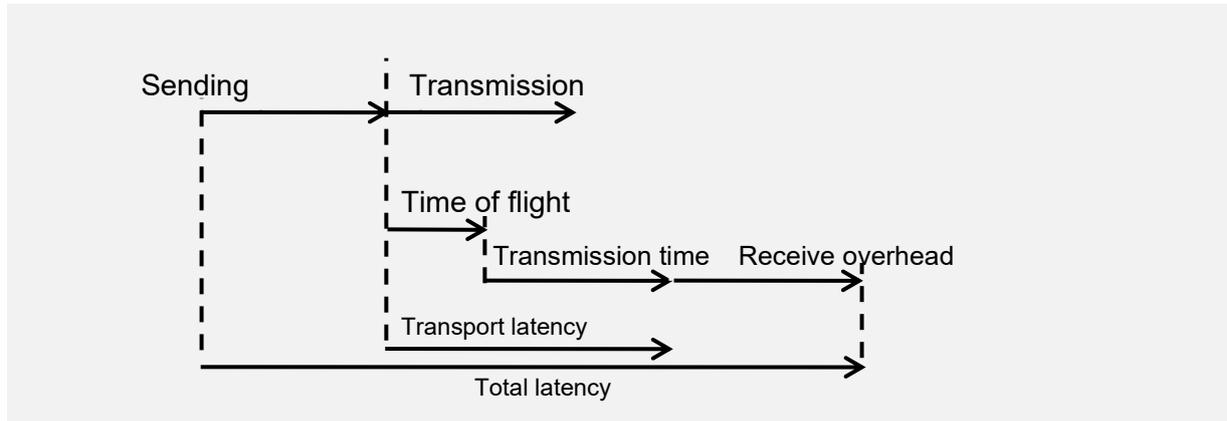
EEE4120F Lecture 11 : Class Activity 2

Calculating the Effective Bandwidth of a communication link

Recipe for the Effective Bandwidth:

Total latency = Sending overhead + Transmission time + time of flight + Receiver overhead

Effective bandwidth = Message size / total latency



Time of flight (ToF) is also referred to as 'propagation delay' – it may depend on how many channels are used. E.g. a two-channel path will give an effective lower propagation.

With switching circuitry, the propagation delay can increase significantly.

Question:

You are wanting to connect three computers, call them computer A, B, and C, together using a fiberoptic wire. B is a relay station for any comms between A and C. Discuss how you would work out the effective bandwidth for this (you do not necessarily need to provide a final bps solution).

The distance between A and B is: 10m, but B and C is 2Km.

Raw bandwidth (limited by comms devices) between A and B: 100Mbit/s

Raw bandwidth (limited by comms devices) between B and C: 10Mbit/s

Message to send is: 10,000 **bytes**

Sending overhead on all: 100us

Receiving overhead on all: 200us

TODO: Calculate the Effective Bandwidth of the connection A - C.

Your Answer: