

10 Principles of Communications (jac22)

- (a) The Internet is a shared resource. Users compete to send traffic, but need to cooperate to conserve resource. However user traffic has two fundamentally different utility curves, being elastic, or inelastic.

In designing resource sharing schemes, two different fairness goals have been defined: proportional fairness versus max-min fairness.

How do these goals reflect the traffic requirements of the two different utility curves? [10 marks]

- (b) Routers can support different types of schedulers to provide fairness and isolation between traffic flowing between different sources and destinations.

You have read about fair queueing, and hear someone has proposed a simpler scheme which could remove the requirement for per-flow state in the scheduler. The proposal is to use random scheduler. Would that be fair? What about isolation?

What are the general considerations about traffic destined to be handled by such a scheduler, for it to work reasonably well? [10 marks]