

Homework#1.1

Objective 1: Able to understand the average throughput that can be achieved in the Internet

Key points:

- The Internet consists of multiple routers and many segments with different bandwidth
- The end-to-end average throughput is limited by the bottleneck link
- If a router with total bandwidth of R is connected to n networks, then it is shared by these n networks, and each network can only enjoy R/n bandwidth **on average**

Problem: Assume that R is connected to 20 servers and 20 end-users (i.e., the client). The bandwidth between each server and the router is $R_s=10\text{Mbps}$, and that between each end-user and the router is $R_c=1\text{Mbps}$, the router bandwidth $R=1\text{Gbps}$. What is the average end-to-end throughput between the server and the client?

