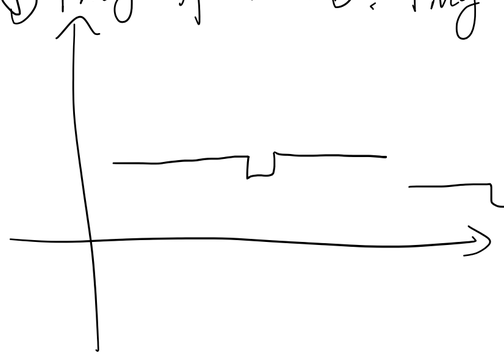
Performance

Thursday, September 18, 2025 2:45 AM

① ping of 100 kB. Ping means sending the RPC result back.



a. send time = 100 kB / 1 Gbps

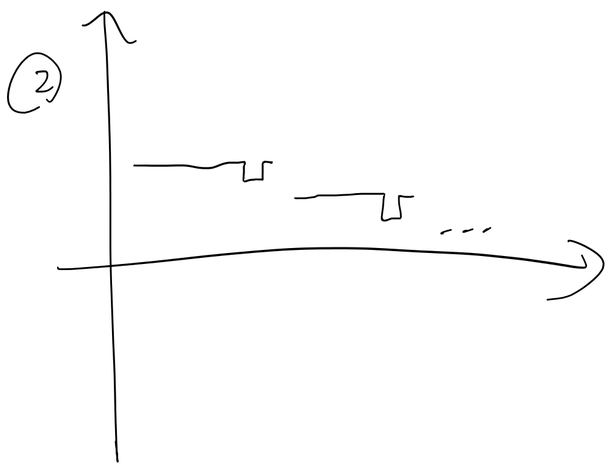
$= \frac{100 \times 10^3 \times 10}{10^9}\ s = 10^{-3}\ s = 1\ ms$

b. process time = 6 rounds × $\frac{100\ kB}{48\ GBps}$

$= 1.25 \times 10^{-5}\ s = 12.5\ us$

c. send response back = send time = 1 ms

writes of 1 MB. Write means responses of about 100 bytes



a. sent time = $\frac{1\ MB}{1\ Gbps}$

$= \frac{10^6 \times 8}{10^9} = 10^{-2}\ s = 10\ ms$

b. process time = 7 rounds × $\frac{1\ MB}{44\ GBps}$

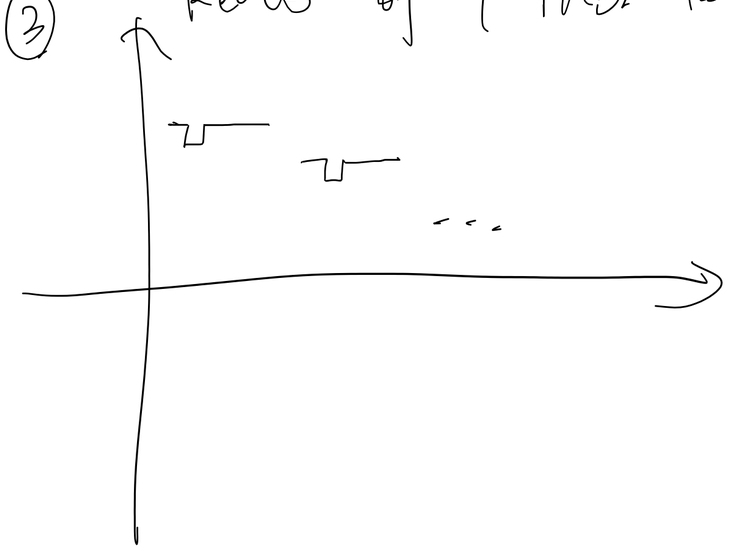
$= 160\ us$

c. send response back = $\frac{100\ bytes}{1\ Gbps}$

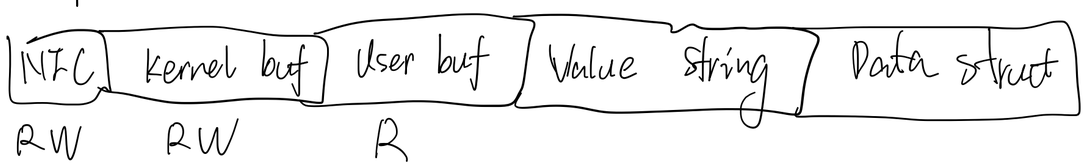
$= 0.8\ us$

Let's say 1us to 10 us, based on the empirical overhead the book shows.

③ Reads of 1 MB. 100 bytes requests and 1 MB response.



a. send time = $\frac{100\ bytes}{1\ Gbps} = 0.8\ us$

b. process time = 

cached ✗

$= 5 \times \frac{1MB}{48\ GBps} = 100\ us$

I don't think the compiler will optimize it to 5 tho.

c. send response back = $\frac{1\ MB}{1Gbps} = 10ms$