Sessió 11 ex. 1, 2 ← Tema 4

① a) $t = \frac{5000 \text{ sectors} \cdot 512 \text{ B/sector} \cdot 1 \text{ TByte}}{256 \text{ MB/s}} = \frac{2.56 \text{ MB}}{256 \text{ MB/s}} = 0.01 \text{ s} = 1 \text{ ms}$

b) $t = t_{Bloc} + t_{seek} + t_{latencia} < 10 + 8 + 2 = 20 \text{ ms}$

c) Ample de banda $= \frac{2.56 \text{ MB}}{20 \text{ ms} \hookrightarrow 10^{-3} \text{ s}} = 128 \text{ MB/s}$

d) $t_{total} = t_{g1} + t_{g2} + t_{g3}$

$t_{total} = 8 \cdot 20 + 0.4 \cdot t_{total} + 4 \cdot 20$ } $t_{total} = 400 \cdot 10^{-3}$ s, $t_{g2} = 160 \cdot 10^{-3}$ s

e) Ample de banda lògic $= \frac{2.56 \cdot 8 \cdot 10^6}{20 \cdot 10^{-3}} = 1024 \text{ MB/s}$

f) Ample de banda exc. $= \frac{2.56 \cdot 4 \cdot 10^6}{20 \cdot 10^{-3}} = 512 \text{ MB/s}$

g) Speedup $f_1 = \frac{160}{20} = 8 \rightarrow (8-1) \cdot 100 = 700\%$

h) Speedup $f_3 = \frac{80}{20} = 4 \rightarrow (4-1) \cdot 100 = 300\%$

i) Speedup aplicació $= \frac{400}{200} = 2 \rightarrow (2-1) \cdot 100 = 100\%$

② a) RAID 6 : $(60-2)$ discs $\cdot$ 300 GB = 17.400 GB
RAID 10 : $(60/2)$ discs $\cdot$ 300 GB = 9.000 GB
RAID 50 : $(9 \cdot 6)$ discs $\cdot$ 300 GB = 16.200 GB
RAID 51 : $(60/2 - 1)$ discs $\cdot$ 300 GB = 8.700 GB

b) 100 MB/s $\cdot$ 60 discs = 6000 MB/s

c) 6 GB/s

d) RAID 6 : 100 MB/s $\cdot$ 58 discs = 5.800 MB/s
RAID 10 : 100 MB/s $\cdot$ 30 discs = 3.000 MB/s
RAID 50 : 100 MB/s $\cdot$ 54 discs = 5.400 MB/s
RAID 51 : 100 MB/s $\cdot$ 29 discs = 2.900 MB/s

e) RAID 6 : 100 MB/s $\cdot$ $(60/6)$ discs = 1.000 MB/s
RAID 10 : 100 MB/s $\cdot$ $(60/12)$ discs = 3.000 MB/s
RAID 50 : 100 MB/s $\cdot$ $(60/4)$ discs = 1.500 MB/s
RAID 51 : 100 MB/s $\cdot$ $((60/4)/2)$ discs = 750 MB/s