Nets and Ops - Part 1

1. EAT = a + p S a = base access time p = page fault rate s = service a page fault

a = 150 nano = 150 X 10^-9

p = 1.0 X 10^-5 = 0.00001

S = Smin=150 micro + 5milli

**Conversion**

a = 150 nano

p= 0.00001

S= Smin=150 micro + 5milli = 5 X 10^-3 = 5000 X 10^-6 = 150 + 5000 = 5150 X 10^-6 = 5150000 nano

**Calculation**

p X S = 0.00001 X 5150000 = 51.5

a + p = 150 + 51.5 = 201.5

**Answer to 3 significant figures**

201

1. Degradation = 100 \* (EAT - a)/a

**Calculation**

EAT – a = 201 – 150 = 51 nano

100\*(EAT - a) = 100\* 51 = 5100

100 \* (EAT - a)/a = 5100 / 150 = 34%

**Answer to 3 significant figures**

34%



|  |  |  |
| --- | --- | --- |
| Memory size | Cost | Cost w/ SSD |
| 2x 0.5 GiB | $0 (current state of machine) | $34 |
| 2x 1 GiB | $10 | $44 |
| 2x 2 GiB | $20 | $54 |
| 2x 4 GiB | $40 | $74 |
| 2x 8 GiB | $80 | $114 |
| 2x 16 GiB | $160 | $194 |

S = Smin + K / D

Smin = 150micro  
k =   
D = Hard Drive = 100 MiB Or SSD = 400 MiB