$\frac{PTE}{8B} = 2^9 \frac{PTE}{P}$

$\frac{39-12}{27}$

$\frac{27}{9}$

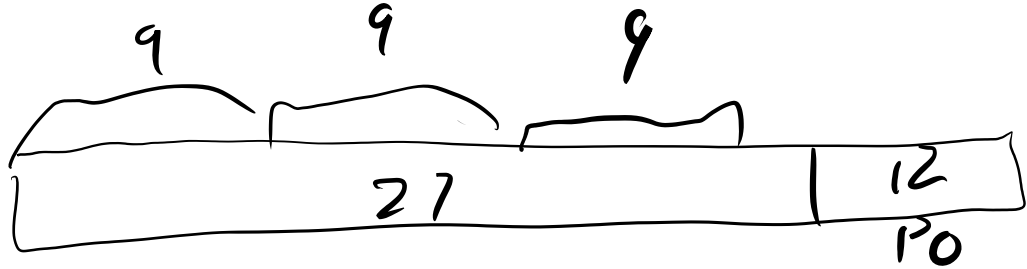
$= 3$

16 KB

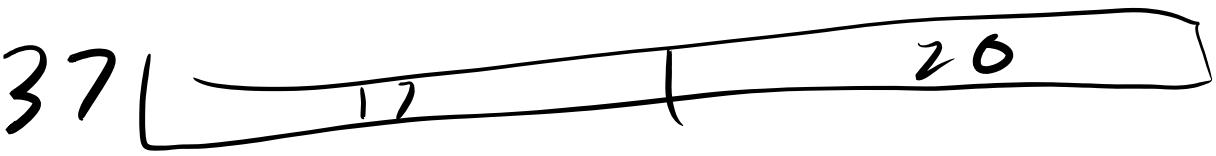
X

$$2^{12}\ \frac{B}{P} \cdot \frac{PTE}{8B} = 2^{9}\ \frac{PTE}{P}$$

39 bit



4.4k = 16KB


37
17
20

Why VM? Swap?

Who sets flags? - OS

Why 3 zeros?

Want each PT to be 1 page

- PTE > PPN (40 bits) $2^{[]}$ flags k x w :

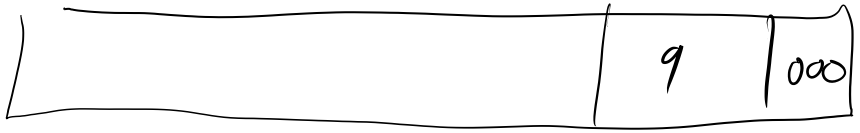
64 bits → 8B

- Page 4KB

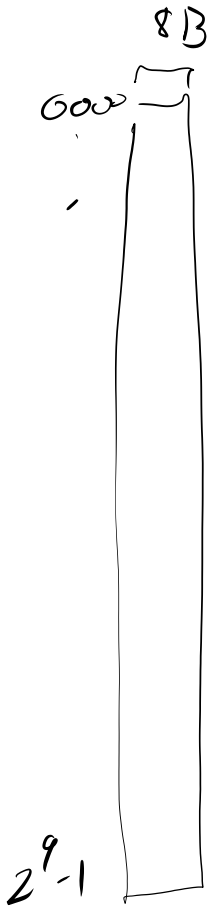
4096

sizeof(size_t [512])

PTE



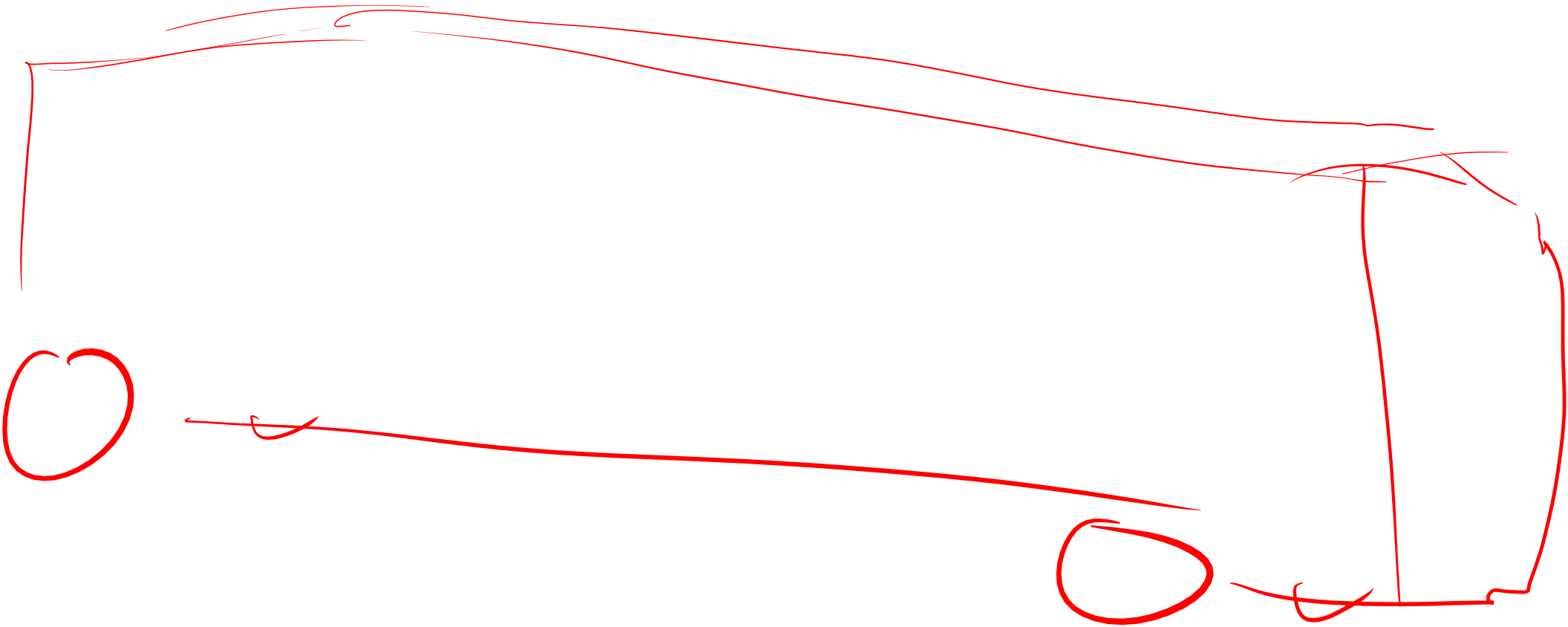
array + index * 8



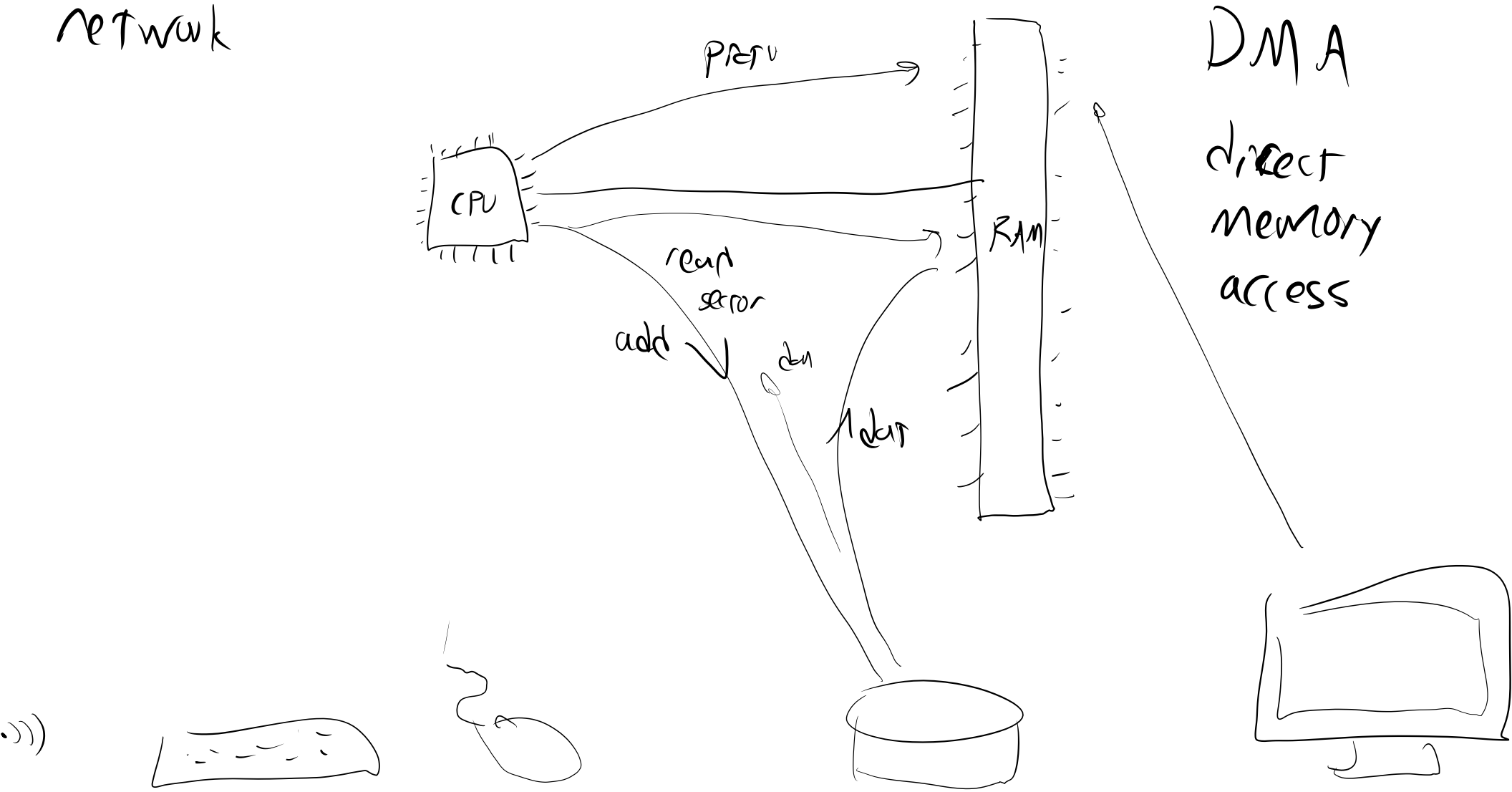
$\frac{PTE}{Page} = 2^9$

Why VM

- Swap - cheap
- assume all address
- isolation
- Shared mem
- hibernation
- kernel/user



network



DMA

direct memory access

Wire

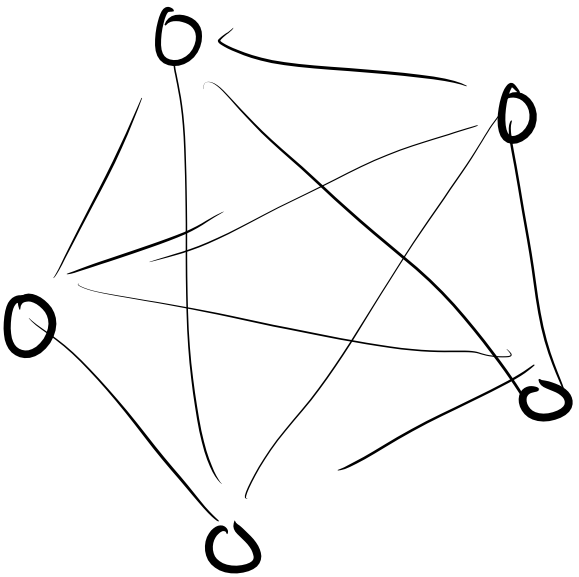
Simplex

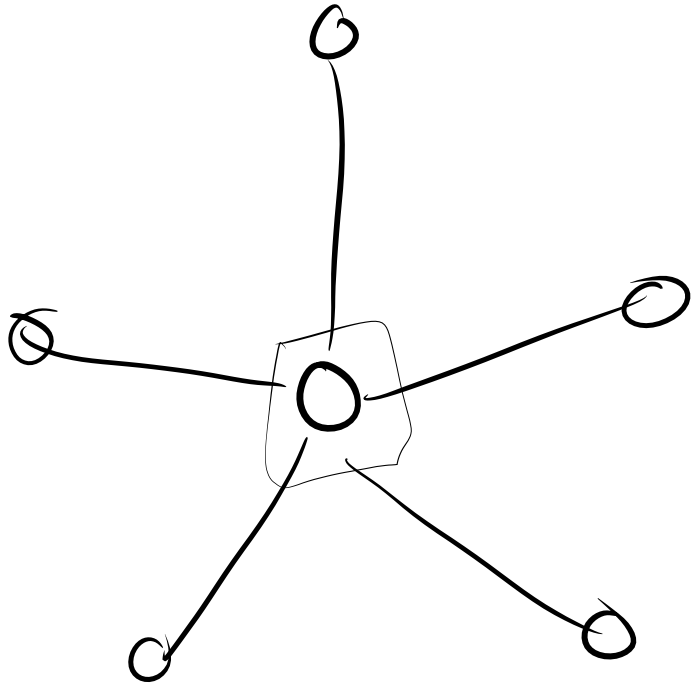
broadcast
multicast

half-duplex

duplex

n $\frac{n(n-1)}{2}$





Bus