



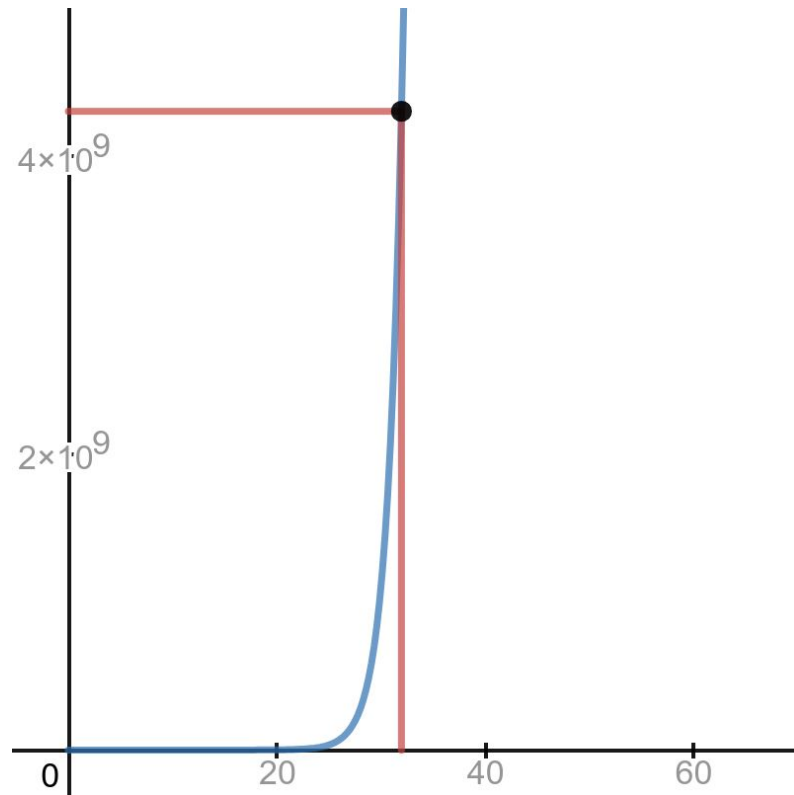
# Paginación nivel 5

Sanabria Betancourt Erik

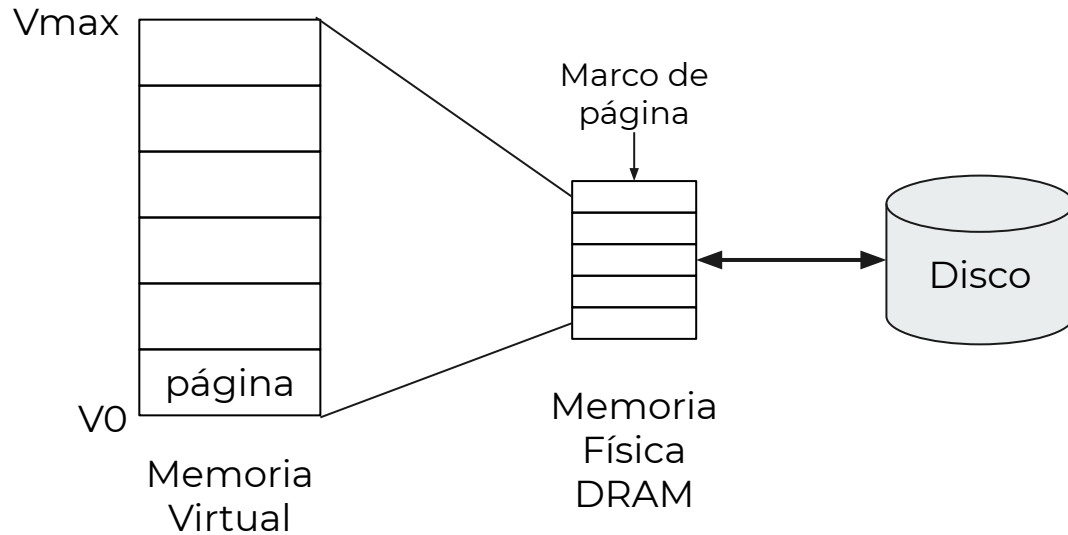
# Arquitectura x86\_64

Direccionamiento de:

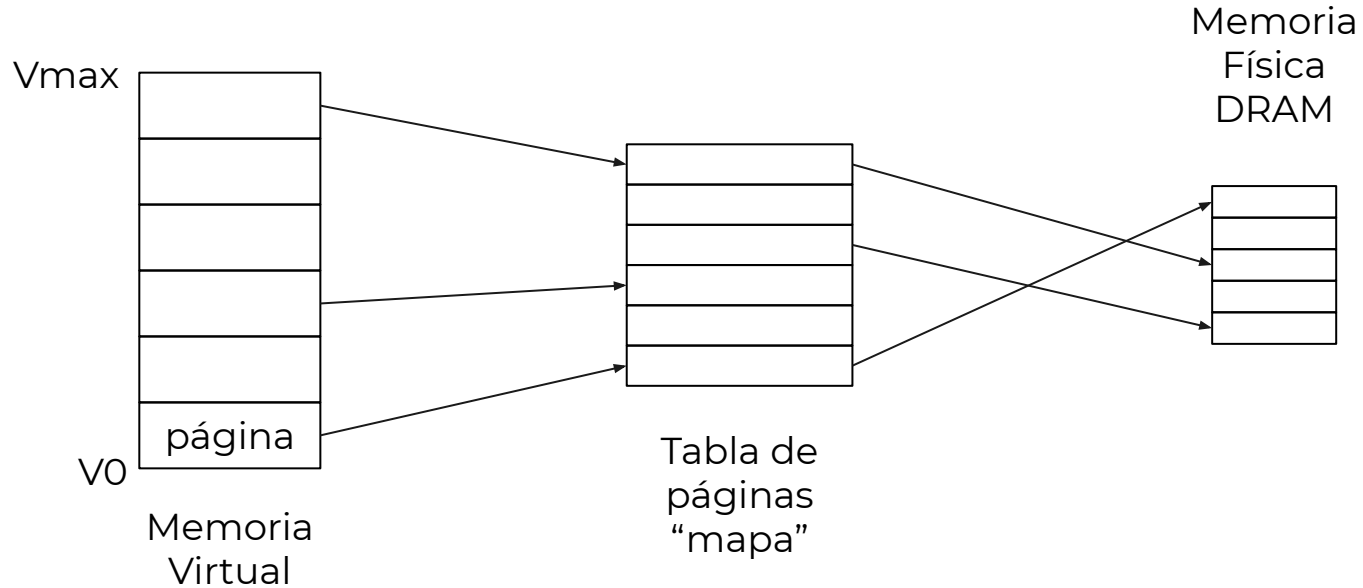
- 16 bits → 64 KB
- 32 bits → 4 GB
- 64 bits → 16M TB = 16 EB
- 39 bits → 512 GB
- 46 bits → 64 TB
- 48 bits → 256 TB



# Memoria Virtual

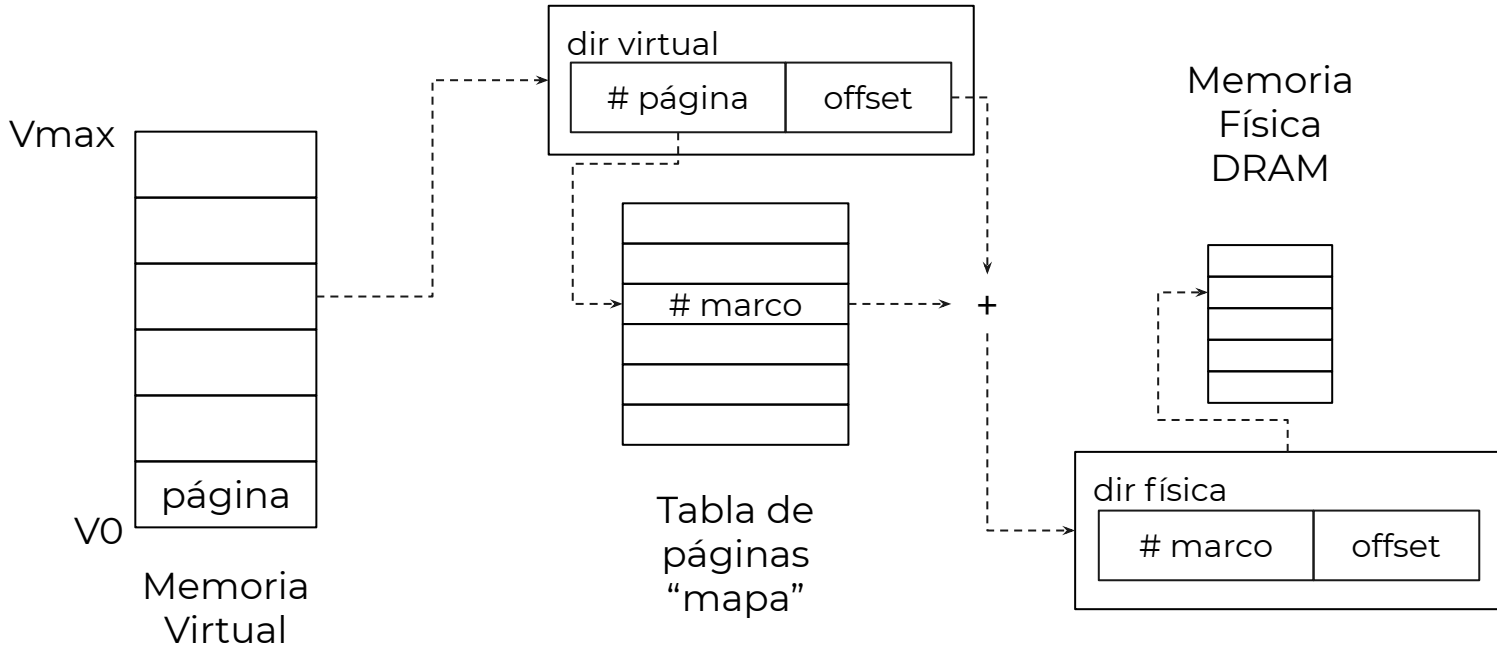


# Paginación

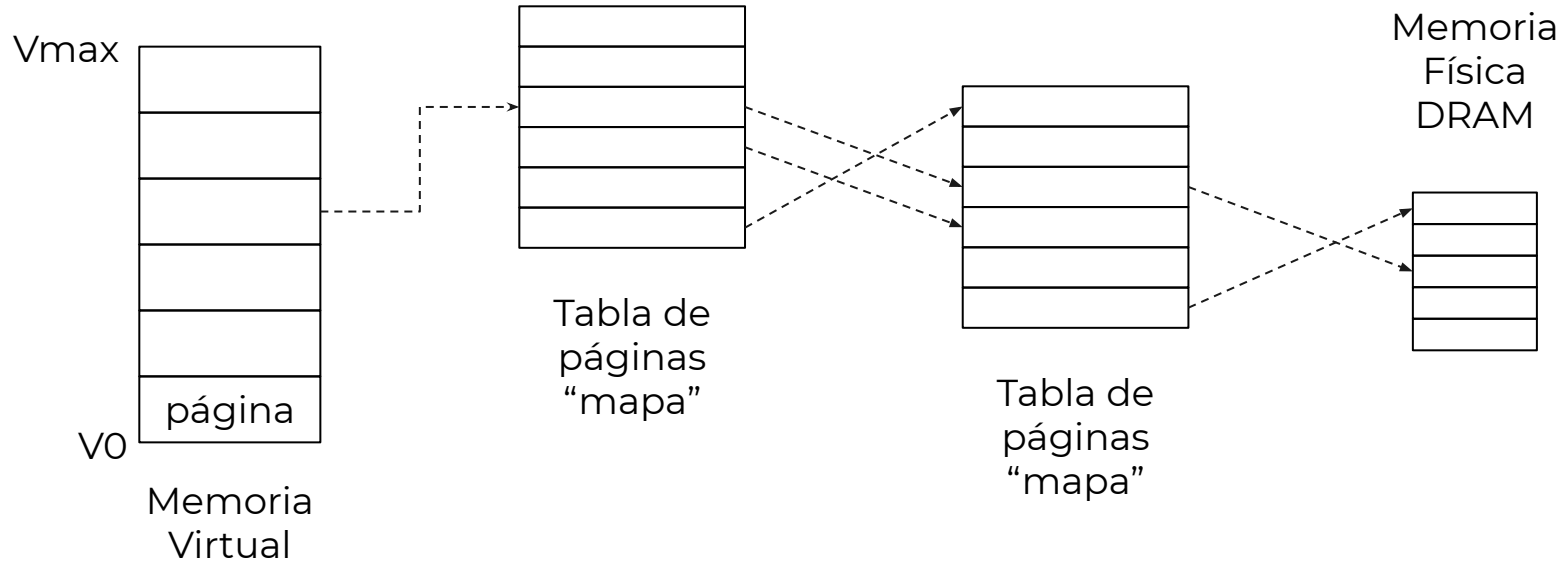




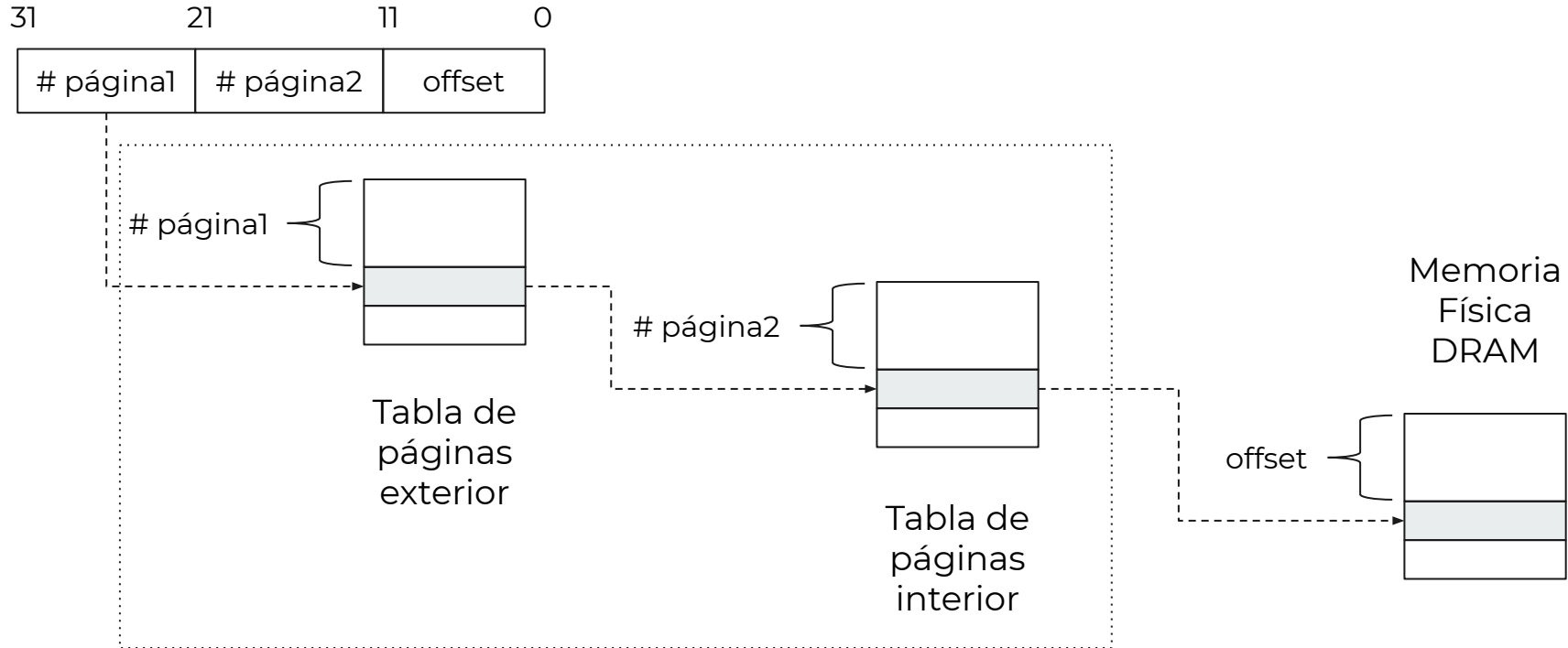
# Tabla de Páginas



# Paginación de múltiples niveles

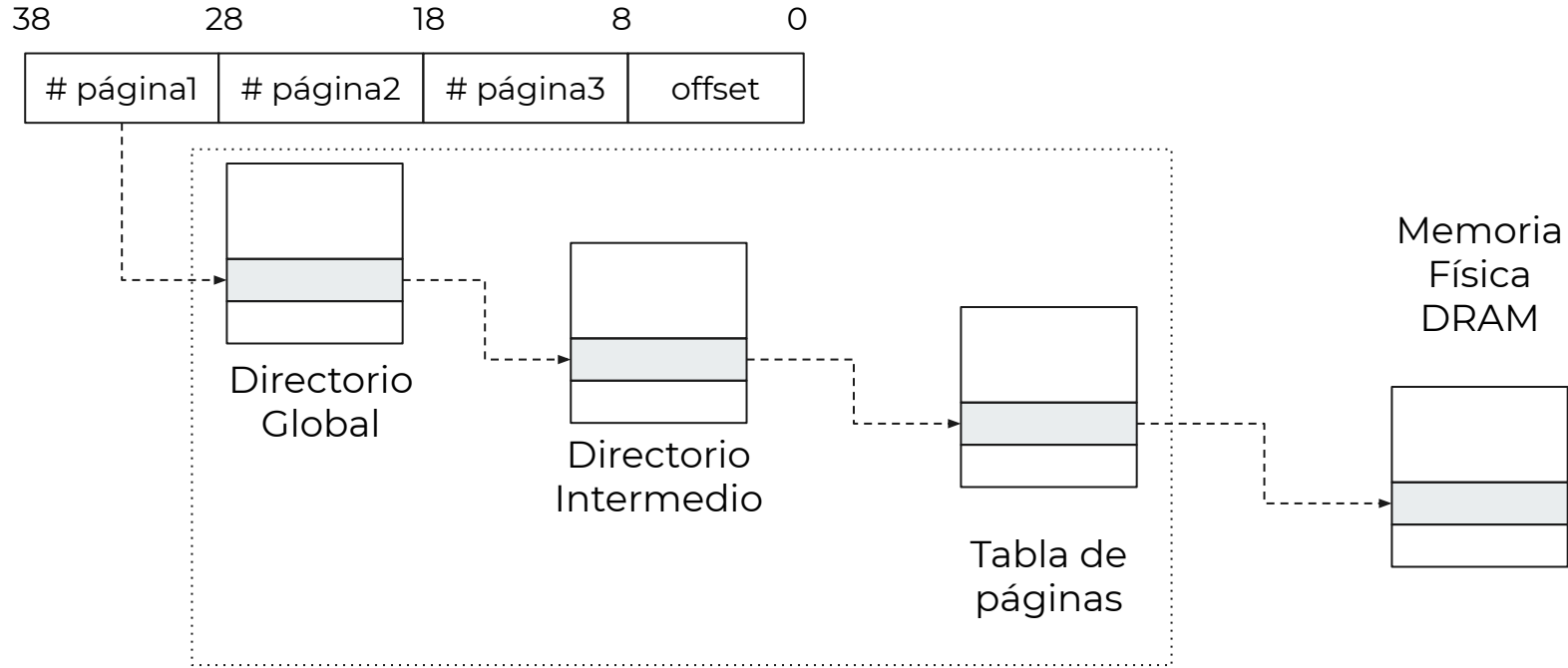


# Paginación en el Pentium de 32-bits

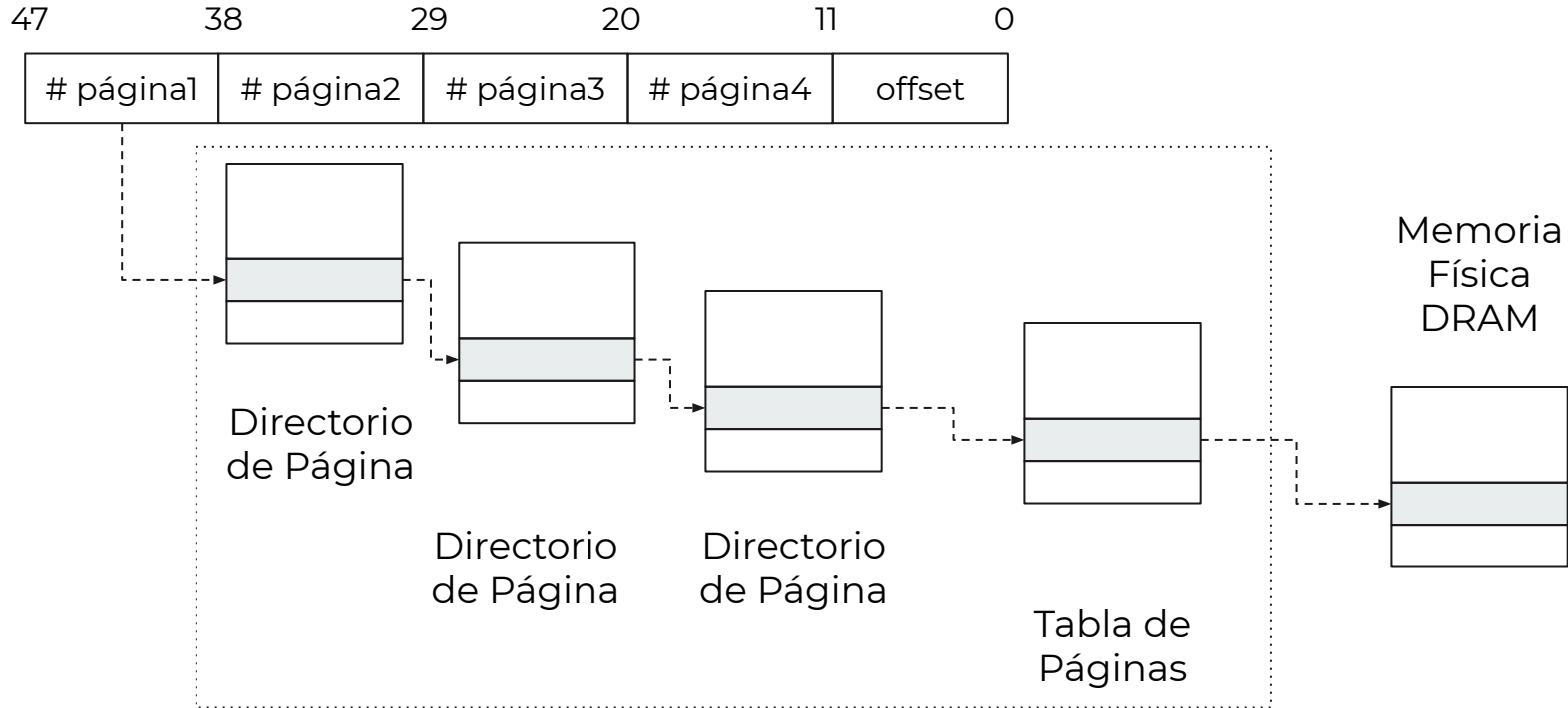




# X86\_64 con 39-bits



# X86\_64 con 48-bits

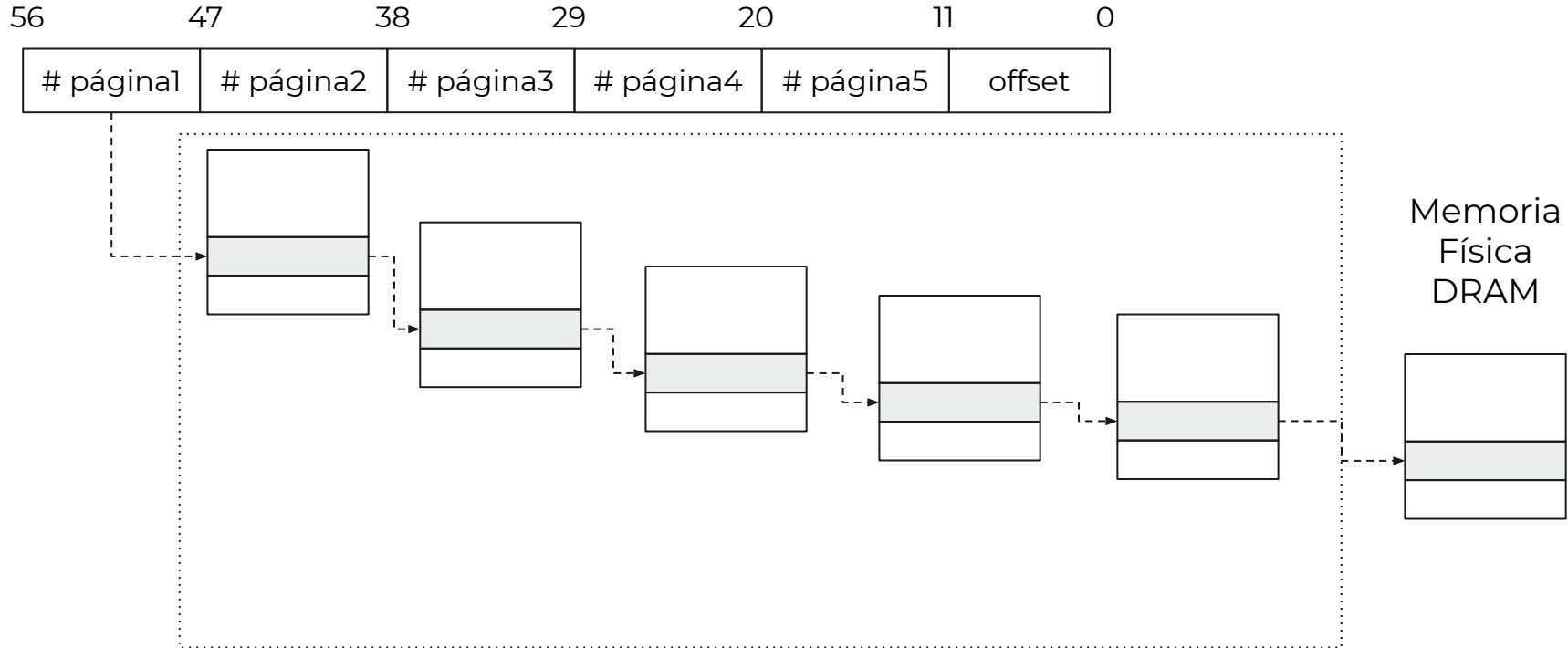




## Paginación nivel 5

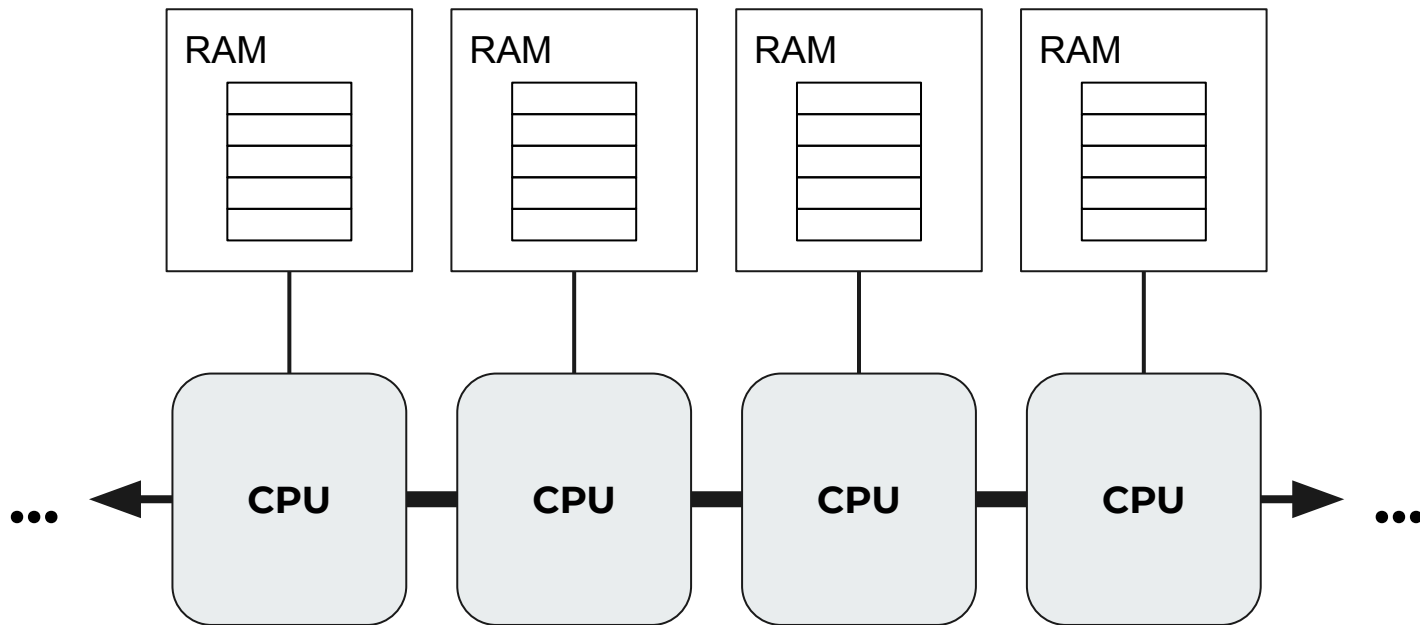
- Memoria física: 46-bits → 52-bits, 64 TB → 4 PB
- Memoria virtual: 48-bits → 57-bits, 256 TB → 128 PB
- Compilar con: **CONFIG\_X86\_5LEVEL=y**

# X86\_64 con 57-bits



# ¿Cómo se Logra?

NUMA → Scale-Up





## ¿Para Qué Tanta Memoria?

- In-Memory Computing
- Bases de Datos
- Business Intelligence
- OLTP
- OLAP
- Virtualización





# Referencias

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- Silberschatz, A. Peter Baer Calvin y Greg Gagne. "Operating System Concepts." Jefferson City:Wiley, 2009.