

Some physical memory addresses are mapped away!

- ▶ only the addresses, not the spaces
- ▶ Memory holes
 - 640KB ~ 1MB
 - /proc/iomem

Memory-mapped I/O

- ▶ BIOS ROM
- ▶ video cards
- ▶ PCI cards
- ▶ ...

This is why 32-bit OSes have problems using 4 gigs of RAM.

0xFFFFFFFF
Reset vector
0xFFFFFFFF0

0x100000

0xF0000

0xE0000

0xC0000

0xA0000

0

JUMP to 0xF0000
Unaddressable memory, real mode is limited to 1MB.
System BIOS
Ext. System BIOS
Expansion Area (maps ROMs for old peripheral cards)
Legacy Video Card Memory Access
Accessible RAM (640KB is enough for anyone – old DOS area)

4GB

4GB-16

1MB

960KB

896KB

768KB

640KB

0