**x86 memory management**

**Linear address space**: the memory that is addressable by the [CPU](https://renenyffenegger.ch/notes/hardware/CPU).

Two memory management facilities:

* segmentation (can be disabled)
* paging (optional)

Segmentation divides the linear address space into (protected) segments.

A particular byte in the linear address space is located by a **logical address** (aka *far pointer*).

A logical address consists of a **segement selector** and an **offset**.

**Segmentation**

Each segment has a **segment descriptor**. A segment descriptor describes

* segment size
* access rights
* privilege level
* segment type
* address of segment's first byte in the linear address space (= segment's **base address**).

The segment selector »points« to the segment descriptor.

Base address + offset = addressed byte in linear address space.

**Paging**

Paging makes *virtual memory* possible.

With paging enabled, a segment is divided into pages. A page is usually 4 kb in size.

