Ordinary hardware (a lot of it)

power utilization energy $\rightarrow$ 1.0
$\searrow$ 1.10 $\rightarrow$ 10% overhead

Xen virtualization

1980 virtualization became close to ⓪

Disco, full virtualization = unmodified OS/application code

Xen paravirtualization = OS cooperates with hypervisor

Why? 1) Consolidate under-utilized servers to reduce CapEx and OpEx

2) Avoid downtime with VM relocation

3) Dynamically rebalance workload to guarantee application SLA's

4) Enforce security policy

Xen purpose 1) high performance x86 virtual machine monitor

2) 100 guest instances

3) hypervisor sitting above HW

Why full is slow? 1) x86 privileged

Platform as a Service