CPU Power Management

C-states, also known as CPU Idle states, are states when the CPU has reduced or turned off selected functions. Different processors support different numbers of C-states in which various parts of the CPU are turned off.

**How to decrease CPU power consumption while it is operating ?**

On a production CPU, to save power, you can do two things. You can:

* eliminate the power consumption of a subsystem (a core or other resources like clock or cache) by completely powering it down (so cutting down the voltage, reducing it to zero)
* decrease the power consumption by decreasing the voltage and/or the frequency of the subsystem and/or the whole processor.

**Processor power states (C-states) vs. performance states (P-states)**

The two ways to decrease the power consumption of a processor:

* powering down subsystems (using C-states)
* voltage/frequency reduction (using P-states)

Logically turn off a cpu (without using C-states)

# echo 0 > /sys/devices/system/cpu/cpu6/online (turn off cpu 6)

# grep "processor" /proc/cpuinfo

###verify it.

# cat /sys/devices/system/cpu/online

# cat /sys/devices/system/cpu/offline

**Interrupt & CPU Polling:**

Interrupt and Polling are the two ways to handle the events generated by the devices that can happen at any moment while CPU is busy in executing another process. Polling and Interrupt let CPU stop what it is currently doing and respond to the more important task.

Polling and Interrupt are different from each other in many aspects. But the basic point that distinguishes Polling and Interrupt is that in polling CPU keeps on checking I/O devices at regular interval whether it needs CPU service whereas, in interrupt, the I/O device interrupts the CPU and tell CPU that it need CPU service.

\*\* For mellanox vma, we can’t disable idle=poll, as it is recommended by mellanox.