System Administration

Assignment 2

Due: 23th August 2016

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1.

	i3	i5	i7
No of cores	2	2-4	2-4
Cache size	3MB	3MB - 6MB	4MB - 8MB
Hyperthreading	Yes	No	Yes
Turbo Boost	No	Yes	Yes
Price	Low	Med	High

The computers in the labs use i5 processor:
We can say that the requirements in labs is to run IDE's compilers etc. at a single time. These processes can run fast without the need of hyper-threading. Thus, i5 is a good choice since they are much less expensive than i7 and provide good processing ability. Since the number of systems are large, this option is not expensive and also provides optimum processing capabilities.

2. CPU:
    a. Laptop : Intel(R) Core(TM) i7-5500U CPU @ 2.40GHz, Power consumption: 15W, TFLOPS: 3.65/1000 = 0.00365 TFLOPS/core
    b. Mobile : Quad-core 2.3 GHz Krait 400, Power rating: 28nm HPm.

3. CPU utilisation of various cores(top command):
    Format: User processes, System Processes, Nice upgrades, Not used, I/O operations, hardware interrupts, software interrupts
    %Cpu0 : 15.2 us, 6.1 sy, 0.0 ni, 77.0 id, 1.7 wa, 0.0 hi, 0.0 si, 0.0 st
    %Cpu1 : 18.3 us, 3.9 sy, 0.0 ni, 71.6 id, 6.1 wa, 0.0 hi, 0.0 si, 0.0 st
    %Cpu2 : 18.1 us, 4.4 sy, 0.0 ni, 76.2 id, 1.3 wa, 0.0 hi, 0.0 si, 0.0 st
    %Cpu3 : 29.7 us, 6.0 sy, 0.0 ni, 60.8 id, 3.4 wa, 0.0 hi, 0.0 si, 0.0 st
    Memory utilisation(free command):
    Total: 8095504 Kb
    Used: 4353224 Kb

Free: 1625852 Kb
Load Average(top command): 1.05(last minute), 1.35(last 5 minutes), 1.43(last 15 minutes)
Power Consumption(powerstat command): 18.56 Watts on average
CPU temperature(sensors): 56 degree celsius

Date: 24rd August 2016, Time: 21:47

4. Haswell vs Ivy Bridge
   Ivy-bridge was a shift from 32nm process to 22nm process (tick - die shrink) however haswell was a change in micro-architecture which is more power efficient. Haswell has better graphics and is faster. However, ivy bridge is cheaper.

5. General Power Consumption: 15W
   No of servers: 1000 dual servers
   Number of processors: 2000
   Power consumed per year: 2000 * 15 * 365 * 24 /1000 kWh = 262800
   Cost of running data center(Rs. 9 per kWh) = 262800 * 9 = Rs. 2365200

   We have 3 lakh/server, now with 1000 servers. The cost comes out to be: Rs. 30 crores.