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ASSIGNMENT1- MODEL

**What is a compute node of mamba composed of? What kind of processor it has? Which**

**architecture is the processor built on?**

Ans:

The Compute node of Mamba composes of 4 nodes with 16 cores and 2GPUs/node = 64 processors or 8GPUs total.

Mamba has 2 Xeon E5-2667 v3 processors that has clock frequency of 3.2Ghz.

Xeon E5-2667 v3 follows Haswell Architecture and Xeon E5-2667 v4 follows Broadwell Architecture.

**What is the maximum number of floating point operations this machine can perform per second?**

Ans:

We have below details form the machine on Mamba:

Cores per CPU = 8

Number of Processors = 2

Number of FMA execution eligible ports =2

Number of Floating point operation in FMA = 2

Number of Floats per instruction(Single precision) = 256/32 = 8

Clock Frequency = 3.2GHz

Total Flops = 2\*8\*2\*2\*8\*3.2GHz

= 512\* 3.2GHz

= 1638.4 GFlops

= 1.6 TFlops

**What is the maximum number of integer operations this machine can perform per second?**

Ans:

We have below details form the machine on Mamba:

Cores per CPU = 8

Number of Processors = 2

Maximum Number of vector Integer operation eligible ports = 3 (Port-0,1,5)

Maximum number of Integer ALU operation in cycle = 1 (Port-6)

Number of Integers per instruction (Packed Single precision) = 256/32 = 8

Clock Frequency = 3.2GHz

Total Flops = 2\*8\*3\*8\*3.2GHz + 2\*8\*1\*3.2GHz

= 384\* 3.2GHz +16\*3.2GHz

= 1228.2 Glops + 51.2 GIops

= 1279.4 Glops

= 1.249414Tlops