Intel Xeon Phi

Current Xeon Phi

• Knights Corner
• co-processor
• 50 cores (not out-of-order)
72-core x86 Knights Landing CPU for exascale supercomputing
• stand-alone
• out-of-order cores (Silvermont)
• 14nm
• 16GB DRAM 3D on-package
• 500 GB/sec memory bandwidth (to on-package DRAM)
• 384 GB of DDR4-2400 on board
• 3 teraflops (double precision); 6 TF single
• 14-16 gigaflop/watt

Integrated on-package MCDRAM brings memory nearer to CPU for higher memory bandwidth and better performance
• With 3 TF per socket and 4 sockets per 1U that is 500 TF in one 42U rack, i.e. ½ petaflop in one cabinet!
Intel AVX-512

- 32 @ 512-bit wide FP registers (SSE was 128)
- 8 mask registers
- 512-bit ops
- packed FP or int operations, e.g. 16@32-bit
- gather/scatter support
- 3-operand instructions, e.g. A = B + C
  (not restricted to A = A + B)