ASC on Metal: ClearSpeed X620

- "SIMD-like" model on a parallel accelerator
- 1 board, 2 chips, each with 96 processing elements for a total of 192 Processing Elements or Poly Execution Units (PEs)
- Each PE has 8KB local SRAM memory and dual 64-bit FPU's
- 25 W average power consumption
- 66+ GFLOP sustained performance on DGEMM
- Cn Language, SDK, and Visual Profiler

a) ClearSpeed Advance X620 SIMD board with 2 chips and 192 PEs
b) Single Chip Execution Units

ASC - a SIMD with Additional Features:

- Locates data (searches) based on content, not memory location
- Processing elements (PEs) have own local memory
- Existing algorithms, programming language, compiler, and emulator
- Data configuration is tabular
- Fast communication: Tightly coupled, local raw data movement (NOT over LAN/WAN)
- Constant time search/respond operations and constant time global reduction operators:
  - Maximum / Minimum
  - "Any Responders?" - "Pick One"

Note: Current hardware configuration is that the three acceleration cards are housed in a single machine for comparative timings.