CDC 6600

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Why use a large computer (supercomputer)?

- To solve more complex problems
  - Completion time for complex problems scales at nonlinear rate
  - Increasing complexity of problems -> growing complexity of computer
- More cost-effective
  - The large computer completes more jobs per dollar
  - Resource sharing by multi-programming increase the efficiency
CDC 6600

- The most powerful supercomputer in 1960s
- Packaging for 400,000 transistors
- 10 MHz clock with 4 phases
- It was a big plus sign.
  - 16 doors with different function
  - 4 R.U. s to cool the system
  - Interconnection wires are in the center

http://ygdes.com/CDC/cdc6600.html
CDC 6600 (2)

- 10 peripheral processors
  - 62 instructions
  - Can transfer blocks to central storage or other peripherals
- Central processor
  - 10 functional units
    - Add, floating mult (2), floating divide, fixed add, increment (2), boolean, shift, branch
    - Typically 2-3 are active at once
  - 24 registers
    - 8 60-bit operands / data words
    - 8 18-bit index registers
    - 8 18-bit address registers

http://ygdes.com/CDC/cdc6600.html
CDC 6600 (3)

- Fast, doing floating point in 3 cycles.
- With a 256 Mbytes/seconds memory bandwidth, the processor doesn’t need to be waiting for memory conflicts.
- All parts of the computer operate asynchronously and independently, makes unbound flexibility for the transfer of data into memory.
- Functional Parallelism
  - Independent functional units
  - A scratch pad
  - Instruction flexibility
  - A control system to schedule these resources