

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

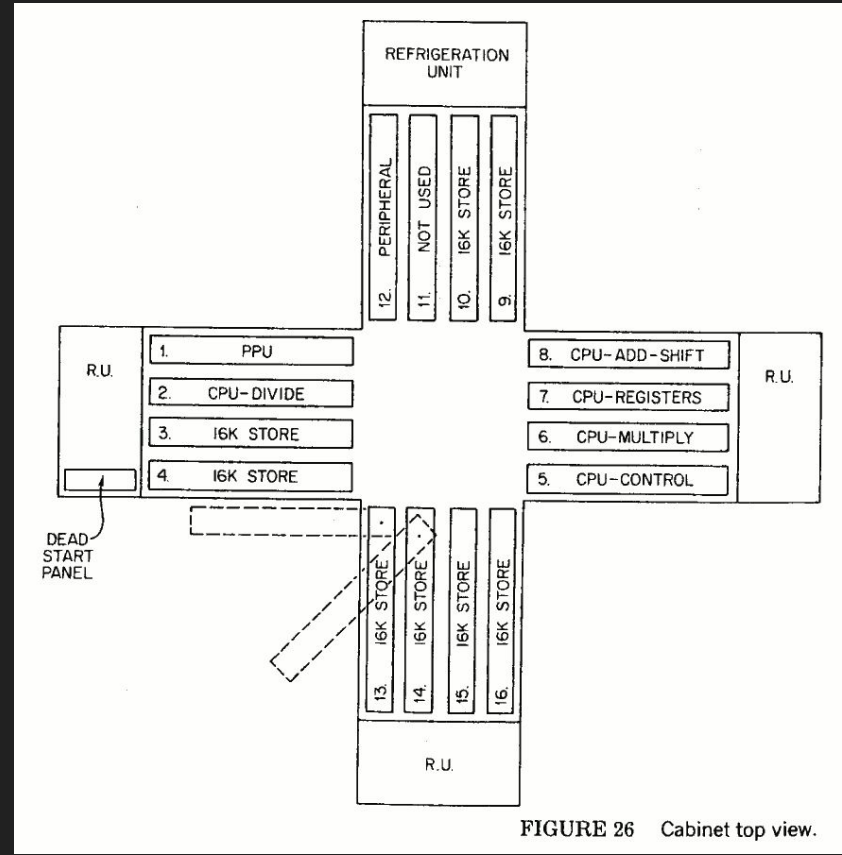
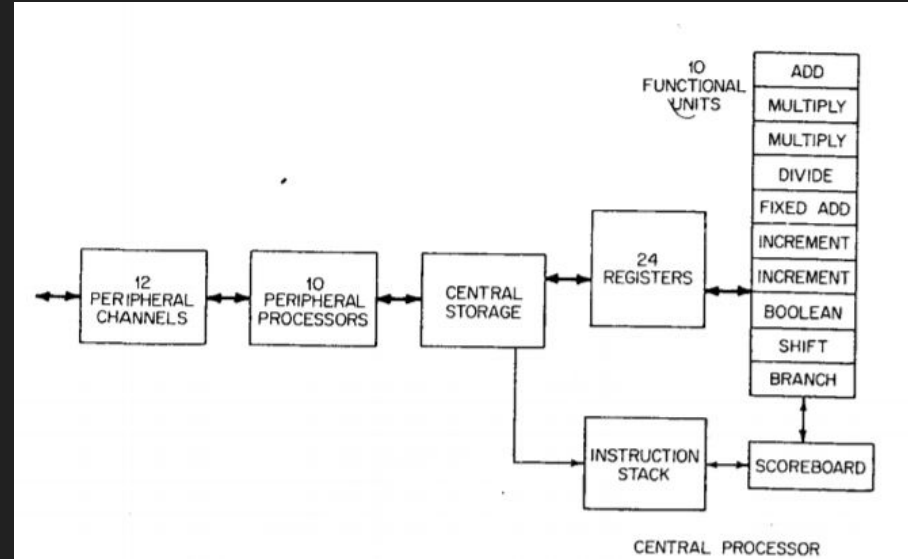


FIGURE 26 Cabinet top view.

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



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