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## The 65C02 microprocessor

The enhanced Apple IIe uses a 65C02 microprocessor as its central processing unit (CPU). The 65C02 in the Apple IIe runs at a clock rate of 1.023 MHz and performs up to 500,000 eight-bit operations per second. You should not use the clock rate as a criterion for comparing different types of microprocessors. The 65C02 has a simpler instruction cycle than most other microprocessors and it uses instruction pipelining for faster processing. The speed of the 65C02 with a 1MHz clock is equivalent to other types of microprocessors with clock rates up to 2.5MHz.

See Appendix A for a description of the 65C02's instruction set and electrical characteristics.

The 65C02 has a 16-bit address bus, giving it an address space of 64K (2 to the 16th power, or 65,536) bytes. The Apple IIe uses special techniques to address outside of this range: see the sections "Bank-Switched Memory" and "Auxiliary Memory and Firmware" in Chapter 4 and the section "Switching I/O Memory" in Chapter 6.

**Table 7-4**  
65C02 microprocessor specifications

<b>Type</b>	65C02
<b>Register complement</b>	8-bit accumulator (A) 8-bit index registers (X,Y) 8-bit stack pointer (S) 8-bit processor status (P) 16-bit program counter (PC)
<b>Data bus</b>	8 bits wide
<b>Address bus</b>	16 bits wide
<b>Address range</b>	65,536 (64K)
<b>Interrupts</b>	IRQ (maskable) NMI (nonmaskable) BRK (programmed)
<b>Operating voltage</b>	+5V ( $\pm 5\%$ )
<b>Power dissipation</b>	5 mW (at 1 MHz)