

I-O devices (paper-tape reader and punch, line printer, etc.) the system can handle these devices at maximum transmission rates without special hardware buffering.

Because it could not be known in advance in which bank the user would be running, it was necessary to add four 2-bit rename registers, which are essentially relocation registers or page registers. These rename registers work in the following manner. If the computer makes a memory reference to bank 0, then the contents of rename register 0 are substituted for the bank address and, hence, the memory reference will go to the physical bank specified by the contents of rename register 0. This mode of operation eliminates the need for multiple-level indirect addressing and gives all the relocation facilities that are needed at present.

Another important set of modifications to the original PDP-1 are the interrelated hardware components which provide for an interrupt (or sequence-break) system, privileged-instruction trap, and memory protection. The Hospital Computer System includes a 16-level interrupt system with a wired-in priority schedule. When an interrupt is received, the hardware determines if any higher-priority interrupt is already being serviced and, if not, honors the new interrupt. If a higher-priority interrupt is being serviced, the new interrupt is stored; it is honored as soon as it becomes the highest-priority interrupt requesting service. Interrupts may be initiated by such mechanical activities as the positioning of the paper-tape reader or a completion pulse from a paper-tape punch or console typewriter, by electrical activities such as the ticks of the 32-millisecond clock and the 1-minute clock, by signals from other processorlike devices such as the data channel or the swapping drum, by the instruction-trap logic,