

Circular buffers for each of the slow I-O devices are maintained in Executive core. Buffer space is allocated according to the speeds of the devices and the number of bits required to specify a character; Table II summarizes the buffer allocation. Each I-O service routine has two functions:

1. sending I-O commands to the device when appropriate; and
2. notifying the Swapper that the user program should be run each time that the buffer is almost full (for input) or almost empty (for output).

Suppose, for example, that a user program has computed a set of values which it wishes to punch on paper tape. The user program first requests connection to the paper-tape punch by means of a two-return IOT; the first return is used if the punch is held by another program, otherwise the punch is assigned to the requesting user. When connection to the punch has been successfully completed, the user program sends characters (or 3-character binary words)

TABLE II. Buffer allocation for slow I-O devices.

Device	Data Rate (characters/sec)	Buffer Length (words)	Buffer Capacity (characters)
Paper-tape reader	400	128	256
Line printer	300	150	450
Paper-tape punch	63	32	32
Console typewriter	12	32	96
Teletype (1 of 64)	10	8	24