

TO: R. C. Daley
 FROM: J. H. Saltzer
 SUBJ: Multics I/O device naming conventions.

The following pattern of I/O device naming conventions seems useful. If you agree, this material should be rewritten and incorporated into some (which?) MSPM section.

Every device falls into some class which has a name--an ASCII string. These names can be the same as the type names proposed in BF.1.01.

Every individual device has an ASCII name which is distinct at least within its class. It would be wise, for redundancy, if names were distinct across classes, also. Some sample individual device names:

T101	}	7 track tape handlers
T102		
T103		
T104	}	9 track tape handlers
T105		
C98	}	Model 37 teletypes
C99		
C100		
C102	}	1050 typewriter consoles
C106		

The registry files are organized by device class, with a different directory for each different device class, the name of the directory is the name of

the class.

The information pertaining to a device "X" of class "Y" is stored in a file named "X" in a directory named "Y". If a device can be known by two or more names, its registry file is known by all those names. This file contains all pertinent information about the device except its current configuration and electrical address.

There is a registry file for every device which may be attached to the system at any time.

The configuration list is distinct from the registry files. It is made up at system initialization time, and contains information about the electrical address of each device and current status of and switch settings on the device. The configuration list is organized by device class, since the format of description of configuration is device class dependent.

The configuration list contains an entry for every device which is currently attached to the system. Each entry is labeled by the device name.

The load list is also distinct from the configuration list and the registry files. It is of interest here because it contains the list of names of hardcore ring entry points used for assigning devices of each class.

The pattern of usage of these names is as follows:

At attach time, the I/O system calls the reserver to request an allotment

of a device from a class, giving the class name in ASCII. (It may request a particular device by giving the complete device name.) If the reservation is OK, the reserver selects a specific device name and calls the Registry File Maintainer to allot that device to the specified process.

The Registry File Maintainer checks the device registry file for the device and establishes if it is OK to allot the device. If so, it locates the device (by its ASCII name) in the configuration list, and the device class in the load list. It then calls the hardcore ring assign entry found in the load list giving as an argument a pointer to the configuration list entry.

The assign entry returns a device index to the RFM, which returns it to the reserver, which returns it to the I/O system. From then on, the I/O system presents this device index whenever attempting to use the device or inquire about its status of a hardcore ring procedure. The device index appears to survive only for the duration of this attachment, although another process assigned the same device will receive the same device index. Device indexes are computed at GIM initialization time and remain constant until the system reconfigures or is reloaded.