TEK 4909

12/21/82

MULTI-USER
FILE MANAGEMENT
SYSTEM

Tektronix

Simplified access to large files by multiple users.

The 4909 is a high performance mass storage system based on a controller which provides advanced file management between multiple desktop computers and large capacity hard disk drives.

Flexible file management provides controlled access to files, expandable records and files, and enhanced data storage and retrieval. Plug-in interfacing permits host interfacing flexibility and the ability to add more disk drives for expanded capacity.

Major features of the 4909 Multi-User File Management System:

- Shared access by a maximum of 10 users
- Public and private file workspaces for operational flexibility/ file protection
- 32 or 96 megabyte drive capacity
- Expandable up to 8 drives (768 megabytes)
- Indexed (Keyed) files
- Dynamically allocated files
- Variable length records
- Concatenated volumes
- High speed GPIB (IEEE 488-1978) interfacing
- English command operation over GPIB
- Time of day clock with battery backup
- File names up to 100 characters long
- Multiple level library names

Mass Storage Expandability

The 4909 offers 32 megabytes of data storage capacity as standard. Optionally, 96 megabytes of storage capacity is available. Each drive comes with a 16 megabyte removable disk cartridge allowing data transportability and fast backup. For increased capacity, additional disk drives can be added by acquiring the 4909AC Auxiliary Cabinet. This cabinet will hold one or two additional disk drives of either 32 or 96
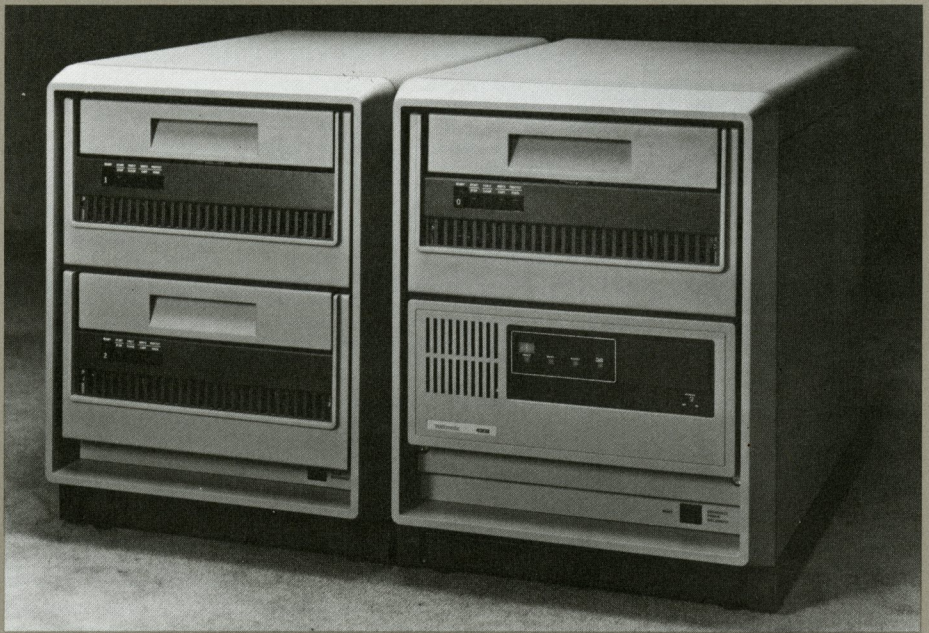
4909 Multi-User File Manager with 4909 Auxiliary Cabinet (left).

megabyte capacity. Interfacing to the 4909 is by a plug-in disk interface which can support two hard disk drives. A maximum of four disk interface plug-ins can be used on the 4909, supplying a maximum of 768 megabytes of online mass storage capacity.

File Security

Several levels of file security are provided by the 4909. The removable disk cartridge allows large collections of files to be completely removed from the 4909 and placed in a physically secure place. For archival storage, the removable cartridge is highly effective.

Files cannot be affected at the volume level unless a master password is known. If a master password was specified when the original disk volume was formatted, that password must be specified to read or write any of the files, thus prohibiting the modification of existing files.

Within a multi-user environment, access to files within a private file workspace is controlled by an access list assigned to each file.

For security, users permitted to use a file within other private file workspaces can be given different levels of access; ranging from read-only to write and delete.
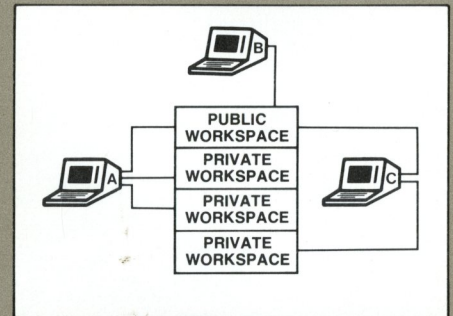

Public and Private File Configuration.

Multi-User Access

The cost effectiveness and contribution to productivity of a mass storage system is enhanced when two or more users are allowed to share information simultaneously. The 4909 allows the sharing and updating of files by up to 10 users. Private file access is permitted after users supply a User-ID and password when accessing the 4909. Access is permitted to a private file workspace if the user entry matches a pre-defined User-ID list maintained by the 4909.

Users who do not provide a User-ID and password when "signing-on" are automatically placed into a public file workspace. All users in the public file workspace have access to the same files. Each file is collectively subject to operations currently taking place by other users within the public file workspace. Public file workspaces allow users of dedicated 4909 systems to not be burdened with multi-user "sign-on" constraints.
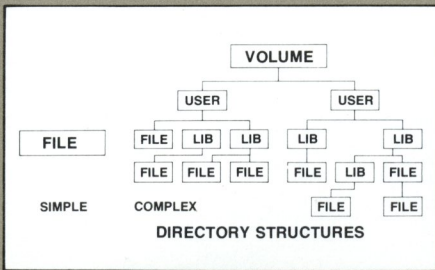
File Management Structure.

Superior File Management

The 4909 is designed for ease of use and superior file management flexibility. The 4909 lets you manage your files, they don't manage you! File names, for example, can be up to 100 characters long. Multiple levels of files called libraries are provided, allowing files to be grouped according to some particular criteria or need. When files are created, users need not worry about how big a file should be, nor what to do if they write more information than the file can hold. The 4909 provides for dynamic allocation or automatic expansion of files, eliminating this "bookkeeping" task by the user.
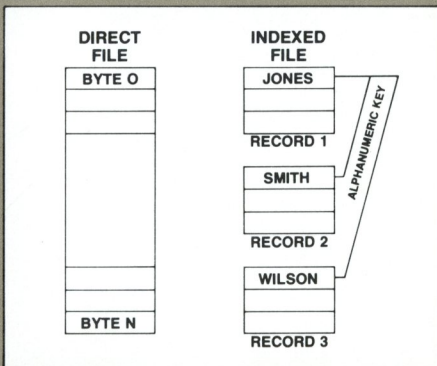
Direct Files, Numeric and ASCII Indexed Files.

Indexed ("Keyed") Files

For users requiring faster, more flexible access to record information stored in files, the 4909 provides indexed files. Each record can be stored and retrieved on the basis of an alphanumeric key. The key used might be an employee's name or a product reference number. With indexed files, information can be organized better, and retrieved faster. A variety of useful commands are provided to allow complete control of indexed files. Indexed files are treated the same as regular files.

True Concatenated Volumes

The 4909 introduces the concept of "concatenated" volume. File size is no longer constrained by the capacity of the drive on which it is located. Multiple drives can logically be configured to appear as one. Any individual file can assume the size of the total configured drive capacity. Fixed as well as removable disk cartridges can be configured together, or kept separate to allow removable cartridges to be transported between other 4909 hard disk systems. Also, when drives are configured together, users need not be concerned with specifying which of the volumes on which a particular file is stored.

Variable Length Records

Variable length records support by the 4909 provides additional flexibility in creating and updating files, allowing records to change in accordance with user requirements.

Interfacing Flexibility

The 4909 controller has eleven plug-in slots allowing a variety of special purpose interfaces to be supported. In addition to hard disk interfacing, access to desktop computers is provided using a GPIB (IEEE 488-1978) plug-in interface. Assuming the 4909 controller contained only a single disk interface, up to ten GPIB interfaces could be supported. A maximum data transfer rate of 240,000 bytes/second is possible per GPIB interface, with some performance degradation depending on the number of users, and the amount of disk access taking place.
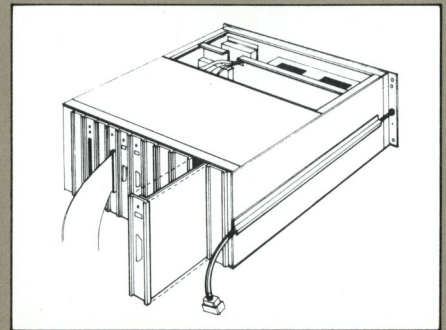
Back view of Controller showing plug-in slots for interfacing.
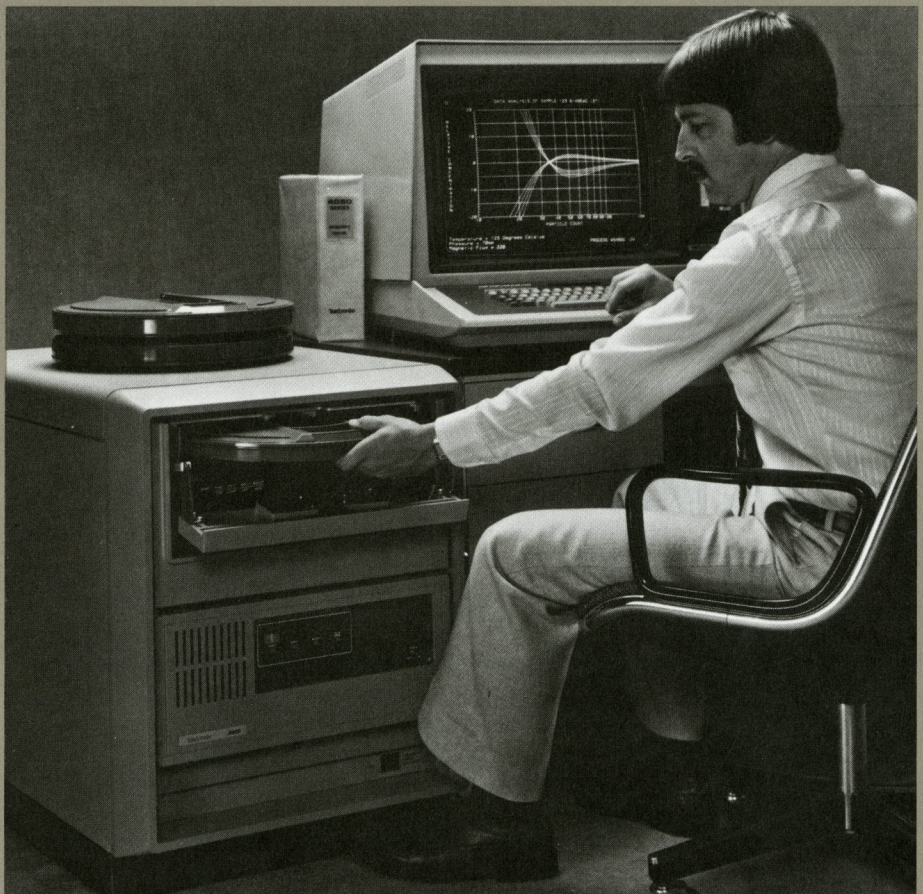
Typical 4909 workstation showing a 4909 Multi-User File Manager with 96 megabyte storage (16 megabyte removable, 80 megabyte fixed) and a 4054 Desktop Computer.

Performance Characteristics

32 or 96 Megabyte capacity per drive
(16 Megabytes removable)
Disk Data Transfer Rate:
1.2 Megabytes/second
GPIB Data Transfer Rate:
240K bytes/sec (max)
Actual transfer rates are application and
computer dependent

Power Requirements
120 VAC at 60Hz 20A
240 VAC at 50Hz 15A
100 VAC at 60Hz 20A
100 VAC at 50Hz 20A

Average access time: 30 ms
Average latency time: 8.33 ms
Recoverable error rate:
2 in 10**10 bits transferred
Number of tracks/inch: 384

Power Consumption
1150 watts maximum at 120VAC, 60Hz, 10
amps.

Physical Characteristics
Width: 565 mm (22.25")
Depth: 850 mm (33.5")

Height: 760 mm (30")
Weight: 137 kg (302 lb)

Environmental Characteristics
Operating Temperature:
 10 to 35 degrees Centigrade
Non-operating Temperature:
 −10 to 50 degrees Centigrade
Altitude: −304.8m to 1981.2m
 −1000 ft to 6500 ft

Operating Humidity:
 20% to 80% relative humidity
Non-operating Humidity:
 10% to 90% relative humidity

Options and Accessories

Options
- GPIB Interface Plug-In
- Disk Interface Plug-In
- 32 or 96 Megabyte Disk Drives
- OEM Configurations

4051R10 or 4052R10 is required with the
4909 system and must be ordered for
each 4051 or 4052/54.

Standard Accessories
- 4909 Multi-User File Management System
  Operator's Manual
- System Software on DC-100A Cartridge
  Tapes
- 4 Meter GPIB Cable
- 16 Megabyte Removable Disk Cartridge

Optional Accessories
- 4909 Multi-User File Management System
  GPIB Reference Manual
- 4909 Multi-User File Management System
  Service Manual

4051R10 and 4052R10 ROM Packs.

ROM Pack Operation

Access to the 4909 from the 4050
Series of desktop computers will be
via GPIB interfacing used in con-
junction with a ROM pack to provide
file management operation. ROM
packs for the 4050 Series include
the 4051R10 for use with the 4051,
and the 4052R10 for use with the
4052/4054.

English Command Operation

Without a ROM pack, devices sup-
porting any IEEE 488-1978 Stan-
dard Compatible interface can
communicate directly with the 4909,
using English commands. The 4909
will respond to ASCII command
strings sent over the bus, and can
therefore be used by a variety of
non-Tektronix desktop computers or
controllers.

Real Time System Clock

The 4909's real time clock, once set,
automatically assigns the time and
date to a file, allowing users to keep
track of when files were created or
updated. Files can be manipulated
on the basis of their time/date
"stamps," e.g., a user may want to
delete all files that have not been
accessed since a particular date.

For example:

hh:mm:ssdd-MON-yy

13:21:18   22-AUG-80

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Telex: 18312

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