
HP's Optical Storage Server for Networked Environments

Technical Data



- **22 Gbytes of On-Line Storage**
- **UNIX Workstation Support**
- **SUN Workstation Support**

Fact: the amount of data created with workstations alone accounts for an *annual 50% increase* in storage requirements for today's workstation-based technology companies*.

Where is all the data stored?
How quickly is it accessed by those who need it? What's the most cost-effective solution? Answers to those questions can spell success or failure for companies that rely on peak productivity for a competitive edge.

That's why Hewlett-Packard offers the Optical Storage Server. It brings 22 Gbytes of storage online for direct, cost-effective access from networked UNIX[®] workstations. Any file, anywhere on the server's hard disk or optical library, can be accessed from the keyboard of any networked workstation in seconds.

Considering the ever-increasing amounts of data being produced by today's technology leaders, this solution is more than just a cost-effective productivity tool. It's the logical, inevitable progression of technology, and the best way yet devised to manage vast and growing amounts of information.



* Source: IDC, 1990

HP Computer Museum
www.hpmuseum.net

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Direct access to the information you need

Most information-based companies view mass storage as a two-tiered solution: Primary Storage (magnetic hard disks) is reserved for frequently accessed information, and Secondary Storage (tape drives) is used for less frequently accessed information. Using hard disks for primary storage keeps information online and readily accessible, but it's an expensive storage solution in terms of cost per megabyte. Using tapes for secondary storage is a less expensive way to store information, but productivity suffers since data is stored offline.

But with the development of rewritable optical technology, a best-of-both-worlds solution called Direct Access Secondary Storage (DASS) has become popular, and for good reasons. With DASS, information that would normally be kept offline in a tape library is just seconds

away in optical storage. And data that would otherwise occupy valuable hard disk space is stored online more cost-effectively.

This is the concept behind HP's Optical Storage Server. It's Direct Access Secondary Storage in the truest sense, keeping primary information on the server's hard disk while secondary information is stored on optical. HP's Optical Storage Server keeps your valuable data safely in the background where it belongs, yet the information you need is just below the surface so it's available when it's needed.

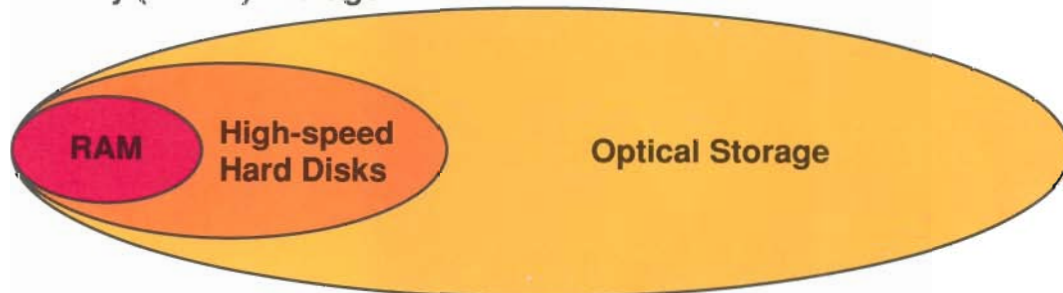
22 Gbytes online

With HP's Optical Storage Server, over 22 Gbytes of information reside in the server's hard disk and optical library. The entire 22 Gbytes are accessible to all workstations on the

network, so users can create new data, call up old files, share inputs, make revisions and return files to storage, all without leaving their desks.

The transfer of data between the hard disks and optical library can be handled automatically within the server's file system according to preset priorities defined by the system administrator. Users on the network don't have to be concerned with the complexities of the system. They just need to know whether they want a file on hard disk or in optical storage. To users, it's as though the system hard disks have unlimited free space — they never fill up because older files are shuttled to optical storage at user-defined intervals.

Primary (online) Storage



Secondary (offline) Storage



Familiar UNIX-like commands

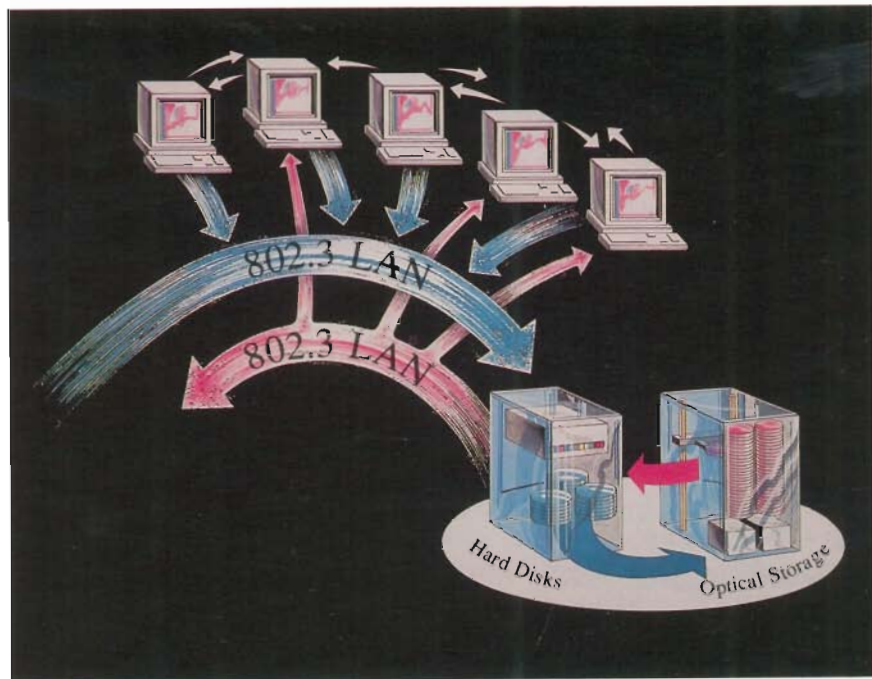
HP's Optical Storage Server uses four UNIX-like commands to simplify the management of data files between hard disk and optical disk. The simplicity of the command structure makes it easy to begin using the system immediately after installation.

- *migrate* — stage the file(s) for optical storage, and index them in a hidden file on hard disk (copy and delete)
- *demigrate* — move the specified files back to their original Winchester directory and location
- *mls* — list the files indexed in the hidden file (similar to *ls* in UNIX)
- *mlocate* — locate files indexed in the hidden files in the specified path (similar to *find* in UNIX)

With these four commands, users can push, pull or locate files anywhere in the system. Users decide whether files reside on hard disk or optical; the file system does the rest, managing data transfers automatically.

A secure environment for valuable data

The Optical Storage Server's file system includes built-in redundancies to ensure that files are not lost or misplaced within the system. The file system automatically records the placement of files within the optical library and establishes a secure path for finding and returning files to hard disk. The system also includes built-in utilities that check file system integrity and allow databases to be rebuilt from optical storage in case of accidental failure or data corruption. These fail-safe measures in



HP's Optical Storage Server significantly heightens productivity along the network without changing the way you work.

the file system, combined with the inherently safe design of HP's autochanger and unquestioned reliability of optical media, provide the safest, most secure mass storage method available today.

Flexibility for personal preferences

Since all companies — and many departments within those companies — have unique needs, HP's Optical Storage Server gives system administrators flexibility to meet the personal preferences of users on the network. Partitions, directories and custom commands can be created easily, and as users become familiar with the system, custom scripts can be written to address additional functions such as backup of local disks over the network and offline archiving.

Industry standards are HP standards

With a solution based on industry standards, you're assured of a long-term investment that works in today's multi-vendor computing environment, and grows to meet the challenges of tomorrow. That's the kind of long-term outlook you've grown to expect from Hewlett-Packard.

HP's Optical Storage Server is based on HP 9000 Series 300 UNIX workstations running HP-UX 7.0. To date, HP's Series 300 and 800 machines, and Sun workstations running SunOS 4.0 or greater, have been qualified as clients to the Optical Storage Server. Other networked workstations may also be compatible with the Optical Storage Server as long as the network and client support standard NFS and ARPA/Berkeley networking protocols.

Technical Information*

Product Units/Specifications

Library System	32 disks, 20.8 Gbytes
Winchester Disks	Three 660 Mbyte drives = 1.9 Gbytes
HP9000 Model 345	16 Mb RAM, 12 MIPS
HP-UX 7.0**	
Application Software	Optical Storage Manager
User Connection	Ethernet with NFS [†] , ARPA/Berkeley Services

Environmental Conditions (for complete configurations)

Temperature: Operating	10 to 40 C
Non-operating	-30 to 60 C
Humidity: Operating	15 to 80% RH
Non-operating	5 to 95% RH
Vibration (5 - 500 Hz): Operating	0.21 G rms
Non-operating (Random)	2.1 G rms
Non-operating (Swept Sine 0-peak)	0.5 G
Altitude: Operating	10,000 ft.
Non-operating	50,000 ft.
Total System Heat Dissipation:	1255 BTUs/hr

Power Requirements

Line Voltage	100-127 V ac; 200-240 V ac
Line Frequency	50-60 Hz
Line Amperage	6.16 Amperes (maximum)

Physical Characteristics

Dimensions (per cabinet)	Weight
Height 720mm (28.3 in.)	Library System (no media) 90kg (198 lbs)
Width 375mm (14.8 in.)	Server Configuration 63kg (139 lbs)
Depth 800mm (31.5 in.)	Total Weight 153kg (337 lbs)

Product Certification (met by all components of configuration)

Safety: UL 478	Laser: CDRH 21 CFR Chapter 1
CSA 22.2 220-M1986	Subpart J Registered
IEC 950	TUV approved VBG 93
EMI: FCC 47 CFR Part 15	VDE 0837
Subpart J-Level "A"	TTL Decision 472
FTZ 1046/84 Level "B"	BS 4803 Part 2
	IEC 825

Service Characteristics

Preventive Maintenance	None required
Warranty	90 days
C2213A	30 min MTTR, 5% AFR
C1700A	30 min MTTR

Ordering Information

All of the following component products must be ordered to configure the Optical Storage Server. Code each order with the system reference number (C2455A). The Optical Storage Manager (C2450A) is available only in this specific configuration.

C2455A System Reference Bundle which includes:

98563H opt. 011, 116	HP 345MH
C2213A opt. 306, 022	HP 660S
C1700A opt. AFJ	HP 20GB/A
C2450A	Optical Storage Manager
92211R	DesignPlus Cabinet
92211S	Rails
92211T	Filler Panel

*Data subject to change.

** HP-UX Release 7.0 is based on AT&T's UNIX System V Release 3.0, and adheres to AT&T's System V Interface Definition Issue 2, and includes selected features from UC Berkeley Software Distribution 4.3.

† UNIX is a registered trademark of AT&T in the U.S.A. and in other countries.

† NFS is a registered trademark of Sun Microsystems, Inc.

For more information, call your local HP sales office listed in your telephone directory or an HP regional office listed below for the location of your nearest sales office.

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