IBM

IBM TotalStorage 3494 Tape Library

Highlights

- **Designed to provide reliable, scalable tape automation**

- **Supports multiple IBM tape drive models**

- **Supports 3592 rewritable and WORM cartridges**

- **Designed to support data retention and business continuity requirements**

- **Supports IBM Virtual Tape**

Overview

The IBM® TotalStorage® 3494 Tape Library (3494 library) consists of individual frames that can be configured to help address a variety of customer requirements. This flexible design enables organizations to install a solution that helps address current capacity requirements and to add capacity when required. Configurations include a Library Base Frame that may be configured with drive frames, storage frames and up to two IBM TotalStorage Virtual Tape Servers. A high-availability model and a dual active accessor feature are available to address the needs of mission-critical environments.

Supports consolidation

The 3494 library can be used for data consolidation to help achieve higher performance and reduced requirements for tape drives and cartridges, environmental controls and personnel. The 3494 library supports WORM and standard rewritable media, providing further opportunity for consolidation. In addition, a 3494 library can be shared across multiple platforms such as the IBM System z™, IBM System p™, IBM System i™, and IBM System x™ servers, as well as various non-IBM platforms.

The 3494 library has a small footprint, starting at two and one half feet wide by five feet deep. This allows it to fit in many environments and makes it suitable for vaults. It can also provide a significant saving in floor space.

Performance

The average mount-access time in a single-frame 3494 library is only seven seconds. The 3494 library can perform

up to 265 cartridge exchanges per hour with a single gripper, up to 305 exchanges per hour with the optional dual gripper and up to 610 exchanges per hour with a dual gripper and dual active accessors.[1]

Due to increased accessor travel, the exchange capability of the accessor can decrease as the number of frames increases. The time required to inventory tape cartridges in any single library frame (control unit, drive unit or storage unit) is approximately four minutes.[2]

In a 3494 HA1 environment, both accessors are used to reduce the time to perform an inventory.

Multiplatform attachment

The 3494 library supports multiplatform attachment to selected System z, System p, System i and System x servers running IBM operating systems and Linux® as well as selected open system servers from Sun Microsystems and Hewlett-Packard. The 3494 library also supports Intel® processor-based systems running Microsoft® Windows® NT®, 2000 and 2003 operating systems.

Enterprise tape drive support

The 3494 library supports up to 128 open system attached IBM System Storage™ TS1120 Tape

Drives (TS1120 tape drive), up to 128 IBM TotalStorage 3592 Tape Drive Model J1A (3592 J1A tape drive) or up to 92 IBM TotalStorage 3590 Tape Drives Model E1A or H1A (3590 tape drive). The 3494 library can support up to 132 3592 tape drives, or up to 76 3590 tape drives in a System z environment when attached to IBM System Storage TS1120 Tape Controller (TS1120 controller).

Storage capacity

The 3494 library supports a maximum of 6,240[3] cartridges which provide a native physical capacity of up to 3.12 PBs.[4] Actual capacity will vary according to the tape technology installed and the application's ability to utilize the capacity of the cartridges. When used with a TS1120 tape drive, the IBM 3592 JA/JW Cartridge has a physical capacity of 500GB with high capacity media or 100GB with short length media; the IBM 3590 High-Performance Cartridge Tape has a physical capacity of 30GB[5], and the IBM 3590 Extended High-Performance Cartridge has a physical capacity of 60GB.[5]

Virtual Tape Server support

The IBM TotalStorage Virtual Tape Server (VTS) is designed to help reduce tape operating costs and improve overall tape library processing performance.

The 3494 cartridge accessor with the dual gripper that provides increased performance and availability.

The subsystem writes virtual volumes to a tape volume cache on a high speed RAID disk buffer to help improve performance, and then stacks the virtual volumes on high-capacity 3592 or 3590 cartridges. This can help reduce the requirements for tape drives, automation devices, media, floor space and operations personnel.

Cartridge interchange

Two optional convenience I/O stations make it possible to add or remove up to 10 to 30 cartridges at once without stopping the cartridge accessor or interrupting library operation. In the

3494 Control Unit frame, a high-capacity, user-defined output facility of up to 160 cartridges is available. An additional high-capacity, user-defined I/O facility of up to 200 cartridges is available for drive or storage frames.

Library components
Tape Library Base Frame
The IBM 3494 Tape Library Base Frame Models L12 and L22 provide the library manager (that manages the robotic cartridge accessor, tape cartridge inventory and interfaces with attached hosts), library console, cartridge accessor and up to 240 cartridge storage cells. Optional features include a dual gripper to help improve performance and a convenience I/O station.

Tape Drive Expansion Frame
The IBM 3494 Expansion Frame Models D12, D14, D22 and D24 provide the capability of adding tape drives and up to 400 cartridge storage cells. The D22 and D24 expansion frames can be configured with optional dual power distribution units which are designed to improve availability in an HA1 environment.

An IBM System Storage TS1120 Tape Controller installed in an IBM 3952 Tape Frame Model F05 can provide ESCON® and FICON® support for tape drives in an adjacent Model L12, L22, D12, or D22 frame.

High Availability Model
The IBM 3494 High Availability Tape Frame Model HA1 provides a second cartridge accessor, library manager and two service frames. If the active accessor fails, the second accessor is capable of docking it in a service bay, where it can be repaired non-disruptively, and then take over library operations. In addition, there is a dual active accessor feature that will allow both cartridge accessors to operate simultaneously to help improve mount/demount performance.

Tape Storage Frame
The IBM 3494 Tape Storage Frame Model S10 provides the capability of adding up to 400 cartridge cells.

IBM TotalStorage Tape Library Specialist
The IBM TotalStorage Tape Library Specialist is a Web-based user interface to the Library Manager. Using the Specialist, information such as current 3494 status and VTS statistics can be accessed from a Web browser by connecting to the Web server on the Library Manager PC. The Web server serves HTML pages to a remote Web browser over a LAN connection or through the Remote Service Access connection over a modem for service.

TS3000 System Console
The 3494 library supports the IBM TS3000 System Console (TSSC). The TSSC is designed to allow IBM Technical Service to download new microcode, remotely monitor the installation, and automatically dispatch a service representative when required.

Software support
Software offerings from various vendors provide storage and tape management software for the 3494 library and supported tape drives. For a list of compatible software, refer to the ISV Compatibility Matrix at **ibm.com**/storage/tape/compatibility. The IBM System Storage Proven™ program provides applications and hardware pre-tested for interoperability. Refer to **ibm.com**/storage/proven for more information.

Competitive financing options
IBM Global Financing offers some of the industry's most competitive rates for a wide range of IBM products and services, including the 3494 tape library, for the duration of the financing term. For more information, please visit:

ibm.com/financing

Media
Tape media can be ordered via library feature codes or via the IBM 3599 Tape Media models. For more information contact your IBM representative or IBM Business Partner or visit:

ibm.com/storage/media

3494 Tape Library performance—exchanges per hour (maximum)[1,6]

Number of units/drives	With single gripper	With dual gripper	With Dual Active Accessor/dual gripper
1/2	265	305	610
2/4	235	290	580
3/4	215	280	560
4/4	200	260	500
8/16	160[6]	225	450
16/16	125[6]	185	370

3494 Tape Library at a glance

Specifications	Control unit frames		Drive unit frames				Storage units	3592 Frame	VTS units	High Availability Frame
Model number	L12	L22	D12	D14	D22	D24	S10	F05	B10/B20	HA1
Unit quantity (minimum)	1	1								
Unit quantity (maximum)	1	1	15	15	15	15	15		2	1
Library manager	1	1								1
Cartridge accessor	1	1								1
Cartridge grippers	1/2	1/2								1/2
Convenience I/O stations (10 or 30 cartridges)	0/1	0/1								
Power kVA (excluding drives)	0.3	0.3	0.1	0.1	0.1	0.1			2.0/4.0	0.3
Voltage (single phase)	200/240	200/240	200/240	200/240	200/240	200/240			200/240	200/240
kBTU/hr (excluding drives)	1.0	1.0	.34	.34	.34	.34			6.2/12.4	1.0
Warranty	1 yr.	1 yr.	1 yr.	1 yr.	1 yr.	1 yr.	1 yr.		1 yr.	1 yr.

3494 Tape Library at a glance

Maximum cartridge storage cells, dual gripper, with 10-cartridge I/O station

Zero tape drives	190	190	360	360	360	360	360			
One to two tape drives	190	190	305	305	305	305				
Three to four tape drives		190	260	275	305	305				
Five to six tape drives			230		260	275				
Seven to eight tape drives					260	275				
Nine to twelve tape drives					230					
Maximum capacity (TB)	38.8[8]	324[9]	64.8[8]	64.8[8]	345[9]	412.5[9]	540[9]			

Tape drive/control unit capacity per frame

3590 Model E1A, H1A[7]	0/2		0/6	0/4						
3592 J1A, TS1120		0/4			0/12	0/8				
TS1120 controller								Up to 3		

Physical characteristics

Width in centimeters (inches)	75.0 (29.3)	75.0 (29.3)	75.0 (29.3)	75.0 (29.3)	75.0 (29.3)	75.0 (29.3)	75.0 (29.3)		72.4 (28.5)	75.0 (29.3)[10]
Depth in centimeters (inches)	152.5 (60.0)	152.5 (60.0)	152.5 (60.0)	152.5 (60.0)	152.5 (60.0)	152.5 (60.0)	75.0 (28.5)		103.6 (40.8)	152.5 (60)[10]
Height in centimeters (inches)	180.0 (70.9)	180.0 (70.9)	180.0 (70.9)	180.0 (70.9)	180.0 (70.9)	180.0 (70.9)	180.0 (70.9)		180.0 (70.9)	180.0 (70.9)[10]
Weight in kilograms (pounds)	559.3 (1233)	559 (1233)	320 (704)	320 (704)	320 (704)	320 (704)	281.0 (625)		540.0 (1188)	444 (999)[10]

THE INFORMATION IN THIS DOCUMENT IS
PROVIDED "AS-IS" WITHOUT ANY
WARRANTY, EITHER EXPRESSED OR
IMPLIED. IBM EXPRESSLY DISCLAIMS ANY
WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE OR
NONINFRINGEMENT. IBM products are
warranted according to the terms and
conditions of the agreements (e.g., IBM
Customer Agreement, Statement of Limited
Warranty, International Program License
Agreement, etc.) under which they are provided.

References in this document to IBM products,
programs or services does not imply that
IBM intends to make such products, programs
or services available in all countries in which
IBM operates or does business. Any reference
to an IBM program or product in this document
is not intended to state or imply that only that
program may be used. Any functionally
equivalent program or product that does not
infringe IBM's intellectual property rights may be
used instead. It is the user's responsibility to
evaluate and verify the operation of any non-
IBM product, program or service.

[1] These numbers reflect accessor capability and
are limited in practice by the number of drives,
application drive residency and other factors.

[2] Performance values are based upon laboratory
analysis and may differ from those realized by a
user. These values do not constitute a
guarantee of performance.

[3] Maximum number of cartridges decreases as
tape/control units are added.

[4] Assumes TS1120 tape drive

[5] Assumes 3590 Model H drive

[6] Actual customer performance may vary
depending on library configuration, host
platform and tape application.

[7] Each 3590 Tape Drive contains one transport. If
mounted in an L12 or a D12 and not attached
to a controller, each 3590 Tape Drive counts as
one tape control unit.

[8] Assumes 3590 Tape Drives Model H1A, High-
Performance Cartridge Tapes, and 3:1
compression.

[9] Assumes TS1120 at 3:1 Compression.

[10] Dimensions for each service bay.