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Moving Image Tools and Technology

XenData®

SXL-8:
LTO-7 ARCHIVE SYSTEM

LTO-7 Archive System

managed by
XenData6 Server software

Eight cartridge autoloader simplifies management of your offline media

Functionality

Unlimited Offline LTO capacity

42TB Near-line LTO capacity

File/folder Interface

Object Storage Interface

Writes to LTO in LTFS or TAR

CIFS/SMB and FTP Network Protocols

Automatic LTO Tape Replication

6 TB Archive/Restore Disk Cache

End to End Verification

Optimized File Restores

Supports Partial File Restores

File and Folder Spanning

Repack of LTO Tape Cartridges

Supports Multiple LTO Groups

Tape Contents and File Search Reports

E-mail Alerts and On-Screen Notifications

Overview

The SXL-8 archive system includes a XenData SX-250 Archive Server and an eight-slot LTO-7 autoloader. Seven of the slots are for LTO cartridges and the eighth is dedicated as a mail slot which allows convenient import and export of cartridges. In addition to the 7 cartridges within autoloader, the system will manage an unlimited number of offline cartridges. If file restores are infrequent, the SXL-8 is a very economical approach for managing large digital archives which can scale to many petabytes.

The SX-250 Archive Server runs a Windows 2012 R2 operating system and XenData6 Server software. It has a 6 TB disk cache which is used intelligently to provide fast archive and restore operations. Archiving occurs at the speed of disk without any of the delays associated with the access time of LTO cartridges. Restoring multiple files is optimized in the system, as files are read from LTO in tape order, minimizing total tape movement.

The SXL-8 system has a network attached storage (NAS) architecture, connecting to the network via 1 GbE or 10 GbE. A choice of 10 GbE interface options is available. The SXL-8 can also connect to a SAN via fibre channel.

Great Compatibility

Files are presented in a standard file/folder structure which is typically shared over the network. This means that the archive appears like disk. Files are transferred to and from the archive locally or using either the standard Windows network protocol (CIFS/SMB) or FTP file transfers. In addition, the system provides an object storage interface using an XML API.

These interface options mean that the system works with most media asset management, automation and NLE systems. Alternatively, video files may be archived and restored manually to a file-folder structure using Windows Explorer or FTP utilities.

Functionality

Key Functionality and Benefits

Standard File Interface – The digital archive accepts all file types – from an MXF to a WORD document - and presents them in a single Windows file/folder structure. Files are written to and retrieved from the archive as though from a standard disk-based volume or network share. **Benefit:** works with most applications natively.

Object Storage Interface – In addition to the file system interface, an XML interface is provided. The XML instructions include the ability to pull assets from and push assets to a specified location, the option to batch and prioritize jobs and obtain job status. **Benefit:** easily allows third party applications to directly control and monitor the archive system.

Windows and Mac Compatibility – Windows and Mac OS X clients are natively supported. **Benefit:** no need to load software on client computers.

Standard Network Protocols – The solution is optimized for CIFS/SMB and FTP file transfers. Furthermore, it supports connectivity to a SAN. **Benefit:** works with the most common network protocols used in media and entertainment.

Manages Near-line Disk, Near-line & Offline Tape – The administrator defines policies for disk caching that can be tailored for different file types and folders. **Benefit:** Frequently accessed files may be retained on disk.

Supported Tape Formats – LTFS and TAR. **Benefit:** avoids proprietary formats and vendor lock-in.

Self-Describing LTO Cartridges – Each LTO cartridge contains all the file system metadata necessary to recover all the files stored on it. **Benefit:** LTO cartridges easily transferred between archive systems.

LTO Cartridge Replication – The software automatically generates replica LTO cartridges that may be exported from the library for off-site retention. **Benefit:** provides strong data protection.

End to End Verification - A read head that follows the write head is used to verify the data just written. **Benefit:** this provides an automated check-sum operation for all data written to LTO.

Supports LTO Cartridge Spanning – The Administrator defined policies can be set to allow or prevent files being spanned across multiple LTO cartridges. Additionally, the transfers of multiple files and folders will be automatically spanned across multiple cartridges. **Benefit:** archive operations are not limited by the capacity of individual LTO cartridges unlike most basic LTFS systems.

Dynamic Expansion of LTO Cartridge Groups – The system will dynamically expand LTO cartridge groups to meet capacity demands. **Benefit:** system runs automatically without need for administrator intervention.

Optimized Restores – The system restores a queue of files in the shortest possible time. The restore requests are processed in an order that minimizes unnecessary tape movement. **Benefit:** greatly decreases total restore time when restoring multiple small files.

File Version Control – The software provides comprehensive file version control. **Benefit:** deleted files and old file versions may be restored from LTO (unless the files have be purged using a repack operation).

Partial File Restore - With very large files there is often a need to read only a portion of the file. For example, this frequently occurs with multi-gigabyte video files when a short clip is requested. The XenData object storage interface is available with partial file restore (PFR) based on timecodes. In addition, the XenData file system interface supports PFR based on byte offset which when combined with applications such as a Dalet media asset management system provide a timecode based PFR solution. **Benefit:** reduces time to restore short clips.

Repack of LTO Cartridges – This copies only current files, excluding deleted files and old versions of files, to new LTO cartridges.
Benefit: permits recovery of capacity from rewritable LTO cartridges.

Metadata Backup and Restore – A file system metadata backup and restore utility is provided. **Benefit:** rapid system restore in case of rebuild after disk failure.

Alert Module – A software module is included which provides e-mail and on-screen alerts. These are tailored to the needs of archive system operators, system administrators and IT support personnel. **Benefit:** ideal for cartridge management and instant notification of any problems.

Cartridge Contents and Search Reports – The files contained on any cartridge, including offline cartridges, can be listed in a report. Additionally, search reports list all the files and their LTO cartridge barcode locations that match a user-defined search term. The reports may be exported to Excel for further analysis. **Benefit:** useful archive management tool.

Industry Standard File Security – The appliance runs Windows Server 2012 R2 Essentials Edition and integrates fully with the Microsoft Windows security model based on Active Directory. **Benefit:** easy integration into an existing Windows environment.

Cartridge Compatibility

LTFS and TAR

The archive system supports both LTFS (Linear Tape File System) and TAR (Tape ARchive) cartridge file system formats. These formats define how data is written to the tape: LTFS and TAR use different data structures for the file data and file system metadata that are written to tape. When configuring a group of LTO cartridges, the administrator selects either TAR or LTFS as the cartridge file system format. In either case, the file restored from the system is identical to the original archived file. For example, if an MXF file is written to the archive, the same MXF will be restored.

The choice of cartridge file system format is important when transferring cartridges from one system to another. The LTFS format was developed by IBM and announced in 2010. Since then, it has been widely adopted, making it an exchange standard which allows cartridges to be moved between systems created by different vendors.

LTO-7, LTO-6 and LTO-5

The archive system is compatible with the following LTO cartridges:

LTO-7 – write/read compatible with 6 TB rewritable cartridges which may be written in either LTFS or TAR
LTO-6 – write/read compatible with 2.5 TB rewritable cartridges which may be written in either LTFS or TAR
LTO-5 – read-only compatible with 1.5 TB rewritable cartridges which were written in either LTFS or XenData TAR

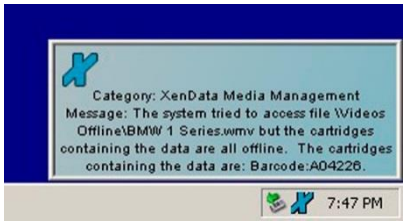
In addition the system is write/read compatible with WORM LTO-7 and LTO-6 cartridges and will read LTO-5 cartridges written on a XenData System using the TAR format.

Archive System Management

Easy Management of Offline Files and LTO Cartridges

The archive system manages an unlimited number of LTO cartridges that have been taken entirely offline. This means that the capacity of the archive effectively becomes infinite. It also means that operator intervention is required to move LTO cartridges from the shelf to the autoloader when there is a need to restore an offline file.

When a file is taken offline by exporting all the LTO cartridges that contain that file, it continues to be shown in the archive file/folder structure. However, this is not the complete file; it is a sparse file which has the same attributes as the complete file, such as reported size, modification date, etc. When an offline file is accessed by a program, a message is returned immediately that identifies that the file is not available. Also, the XenData software puts a message in the Windows Event Log and optionally sends an e-mail and/or on-screen message that identifies which LTO cartridges contain the requested file. This notification allows the correct cartridge to be easily identified and then imported back into the LTO library. The file will then be automatically restored when the read request is retried.



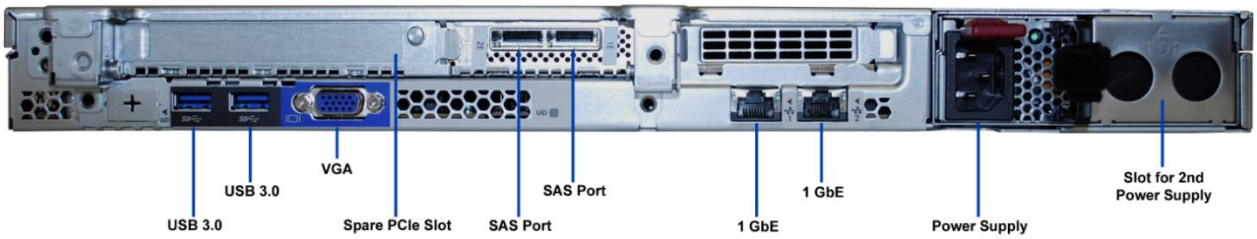
The system includes a plug-in to Windows Explorer and a report generator which allow display of the physical storage locations of any version of any file. These are particularly useful for managing offline files.

Automatic Operation

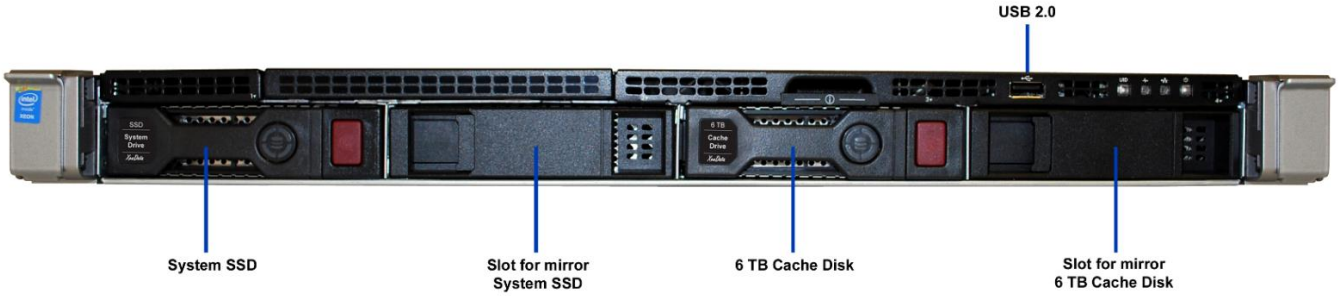
The autoloader minimizes the need for operator intervention when compared to a system with external LTO drives. When blank cartridges are available within the autoloader, the system will automatically initialize and use these when cartridges become full. If automatic LTO cartridge replication is used, the system can be scheduled to update replica cartridges over-night to minimize unnecessary cartridge swaps. When operator intervention is required to exchange full LTO tapes for new blank cartridges, the system will issue email alerts.

Server Connections

Connections to the rear of the SX-250 archive server are shown below.



The front of the SX-250 includes a USB 2.0 connection, shown below:



LTO Autoloader Front Panel

The front of the LTO-7 autoloader includes a mail slot which allows convenient import and export of LTO cartridges, one at a time:

Specifications

LTO-7 Autoloader

Tape drive type:	IBM LTO-7 half-height
Drive interface:	SFF-8088 connection; 6 Gb/s SAS - 2m cable for connection to SX-250 is included
Transfer rate – writing and reading:	300 Mbytes/s native
Number of tape drives:	1
Number of cartridge slots:	7
Number of mail slots:	1
Barcode reader:	Included
Interface to Medium Changer:	ADI
Mean Swaps Between Failures:	2 million robot load/unload cycles
Electrical	
Number of power supplies:	1
Voltage:	100-240VAC; 50-60Hz
Power	110W max
Dimensions & Weight	
Rack form factor:	1U, 31.9 inches (809 mm) deep
Weight:	25.4 lbs (11.5 Kg)
Dimensions (HxWxD):	1.7” x 19.0” x 31.9” (44mm x 482mm x 809mm)
Rack rails:	Included

SX-250 Archive Server

Archive management software:	XenData6 Server
Notification software:	XenData Alert Module
Operating system:	Microsoft Windows Server 2012 R2 Essentials
Processor:	Intel® Xeon® 6-core processor
RAM:	32 GB
System disk:	240 GB SSD
Cache disk:	6 TB SAS 7,200 rpm
Network connections:	2 x RJ45 connectors; 1000BASE-T, 100-BASE-TX, 10BASE-T
USB connections:	2 x USB 3.0 (rear mounted); 1 x USB 2.0 (front mounted)
Connections to library:	1 x SFF-8088 port; plus a spare SFF-8088 port
Number of power supplies:	1 – 2nd redundant power supply is available as an upgrade option
Power:	100-240V; 50-60 Hz; 6.2-4.1 Amp max
Operation temperature:	50-95°F (10-35°C)
Operation humidity:	8-90% non-condensing
Form factor:	1U, 23.9” deep
Dimensions (HxWxD):	1.7” x 17.1” x 23.9” (42.9mm x 434.6mm x 607.6mm)
Weight:	25.4 lbs (11.5 Kg)
Rack Rails:	Included

SXL-8 Upgrade Options

XenData SKU	Description
	Connectivity Options
101048	Dual port 10 GbE network adapter HP 560SFP+ pre-installed in SX-250. This adds two 10 GbE ports to the SX-250 and uses the spare PCIe slot. Transceivers not included.
101057	SFP+ 10 Gb/s LC Short Range Transceiver for insertion in SKU 101048. HP part number J9150A. Quantity 2 required to use both 10 GbE ports in the adapter.
107130	Dual port 10 GbE network adapter for use with standard CAT6 or UTP cabling pre-installed in SX-250. It is an HP model 561T adapter and uses the spare PCIe slot.
101023	Fibre Channel adapter pre-installed in SX-250 for FC SAN connectivity. Provides two 8 Gb/s FC ports with LC type connectors. Uses the spare PCIe slot.
	Redundancy Options
222002	Additional power supply for SX-250, providing dual AC power input.
108049	Redundant power supply for RLS-8350 library. This is connected internally within the library, using a single AC power input.
222050	Disk Redundancy Upgrade. Includes an additional 6TB cache disk and system SSD which are pre-installed and configured as mirror disks.
	Performance Option
222051	32GB of additional RAM pre-installed in the SX-250, taking the total RAM capacity to 64GB.

For details or to order, contact us

CEO: Ted Langdell (530) 301-2931 ted@flashscan8.us

www.flashscan8.us 209 East 12th Street, Marysville, CA 95901

Additional Information

For further information, please contact XenData.

USA: XenData, Inc., 2125 Oak Grove Road, Walnut Creek, California 94598; Tel: +1 925.465.4300

UK: XenData Limited, Sheraton House, Castle Park, Cambridge CB3 0AX; Tel: +44 1223 370114

Web: www.xendata.com

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