



Product Brief: XenData® SX Archive Servers



**LTO Digital Video Archives optimized for broadcasters, production,
post-production and video service organizations**

Overview

A XenData SX Archive Server manages an LTO tape library and creates a cost effective digital video archive that is optimized for the requirements of the media and entertainment industry. SX Archive Servers combine two leading proven products: HP's DL380 G7 server and XenData's X64 Edition software. They are available in three standard configurations, each optimized for video archive applications.



The solution delivers high performance, writing and reading at many times real-time; yet it is non-proprietary, presenting the digital archive as a standard Windows file system. Files are written to LTO tape using the open standard POSIX tar format. This is important for long term archives because it means that files can be restored for decades to come using a wide range of native Linux and Unix operating systems, Microsoft Services for Unix, as well as XenData software.

The XenData archive has a standard file system interface appearing as a Windows logical drive letter which is shared over the network. The solution is optimized for use with the standard Windows network protocol (CIFS/SMB) or FTP file transfers. This non-proprietary approach to the interface means that the archive can be used simultaneously by multiple standard applications including those running on Windows and Mac OS X. Furthermore, it does not tie the user to any particular asset management, automation or NLE system.

Archive Configuration



The SX Archive Server connects to the LTO tape library via multiple SAS, Fibre Channel and/or SCSI cables. Prior to shipment from XenData, the SX server is configured to meet the specific connectivity requirements of the chosen tape library.

The SX server connects to the network via 1 or 10 GbE. Four 1 GbE network connections are provided as standard and 10 GbE is available as an option.

The SX Archive Server includes RAID cache which is used to enhance archive and restore performance and may also be used to retain selected files online. The RAID cache uses SAS or SATA disk drives in a high performance RAID 50 configuration.

Example digital video archive

Functionality

All SX Archive Servers provide the following functionality.

- ❖ **Standard File Interface** - The digital archive accepts all file types and presents them in a single Windows file system. Files are written to and retrieved from the archive as though from a standard magnetic disk drive.
- ❖ **Windows and Mac Compatibility** - Windows and Apple OS X clients are natively supported without the need for loading any client software.
- ❖ **Standard Network Protocols** - The solution is optimized for CIFS/SMB and FTP file transfers.
- ❖ **Manages Nearline Disk, Nearline & Offline Tape** - The administrator defines policies for RAID caching that can be tailored for different file types and folders.
- ❖ **Standard POSIX tar Tape Format** - The archived files are written to tape using the standard POSIX tar format. This means that, in addition to using XenData software, files may be restored using a wide range of Linux and UNIX operating systems.
- ❖ **Self-Describing Data Tapes** - Each tape cartridge contains all the file system metadata necessary to recover all the files stored on it whether using XenData software, Microsoft Services for Unix, Linux or UNIX operating system commands.
- ❖ **Tape Replication** - The software automatically generates replica data tape cartridges that may be exported from the library for off-site retention. Furthermore the tapes may be rapidly imported into a replica DR system.
- ❖ **Supports Tape Cartridge Spanning** - The Administrator defined policies can be set to allow or prevent files being spanned across multiple tape cartridges. This option is particularly useful when very large files are being archived.
- ❖ **Multiple Tape Pool Support** - The software allows groups of file to be allocated to specified pools of tapes. The Administrator defined policies can be used to group related files together on the same set of tapes.
- ❖ **Dynamic Expansion of Tape Sets** - The system will dynamically expand tape sets to meet capacity demands, minimizing system administration.
- ❖ **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.
- ❖ **File Version Control** - The software provides comprehensive file version control. Deleted files and old file versions may be restored from tape (unless the files have been purged using a repack operation).
- ❖ **Partial Read of Large Files** - 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. XenData software supports partial reading of large files based on byte offset. For a total solution that provides partial restores based on time code, a third party application that supports partial restores based on time code should be used, such as a Dalet media asset management system, a Sienna newsroom automation system, Omneon Media Application Server, etc.

- ❖ **Repack of Tapes** - This copies only current files, excluding deleted files and old versions of files, to new tapes. Benefits: permits recovery of capacity from rewritable tapes. Note that this functionality is not available when using WORM tapes.
- ❖ **Transfer of Content between Systems** - Export and import functions allow LTO tapes to be easily transferred from one location to another. There is compatibility between the SX Archive Servers and systems running XenData6 Workstation, including X1500 and X800 archives.
- ❖ **Supports WORM Tape** - The software supports both standard rewritable data tape and unalterable WORM. The use of unalterable WORM tape cartridges is especially important for legal compliance applications.
- ❖ **Metadata Backup and Restore** - A file system metadata backup and restore utility provides rapid system restore in case of rebuild after RAID 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.
- ❖ **Tape Contents Reports** - The files contained on any tape, including offline tapes, can be listed in a report which may be exported to Excel.
- ❖ **System Upgrade** - Upgrading to a later generation of LTO is a very cost effective way to increase the size of an existing archive. XenData archive software makes for easy system upgrades, going from an older to a later generation of LTO.
- ❖ **Industry Standard File Security** - The file server integrates fully with the Microsoft Windows security model based on Active Directory.

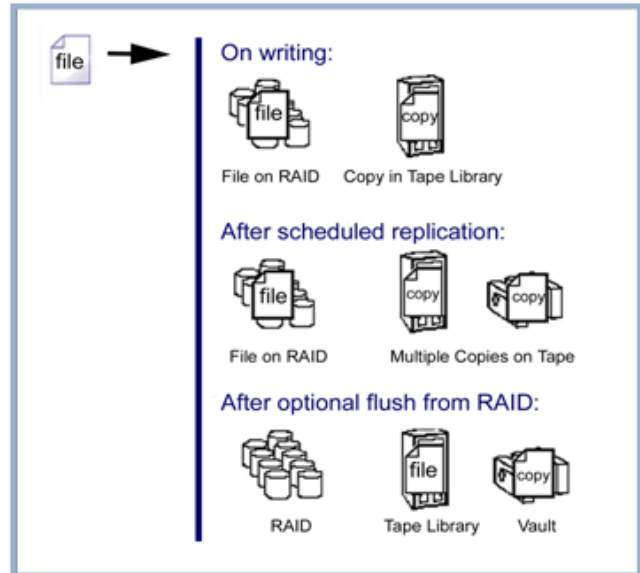
XenData File Management Policies

The system administrator defines policies that determine where data files are physically stored on the digital archive. These policies support hierarchical storage management (HSM) and automatic tape cartridge replication.

SX Archive Servers supports three main levels of storage hierarchy:

- ❖ Online with one instance of a file on RAID and, in addition, there will typically be one or more instances on tape. In this case the file will be retrieved from RAID when accessed over the network.
- ❖ Near-line with at least one instance of a file on tape within the library and no instance on RAID. When a near-line file is accessed over the network, the XenData software automatically transfers the file from tape to RAID cache. As soon as the file transfer to RAID commences, the file transfer over the network also starts.
- ❖ Off-line with no instance on RAID and one or more instances of a file on tape, all of which have been exported from the tape library. Data protection is achieved by automatically generating multiple instances of a file. The XenData software can automatically produce copies of data tapes for export from the tape library and off-site retention.

A SX Archive Server may have many different policies, tailored to the needs of the different file types that are being archived. A typical XenData file management policy is illustrated in the diagram opposite. On writing a file, it is first written to RAID. As soon as the file has been successfully written to disk, it is put into a queue to be written to a primary tape cartridge. After completion of this operation, there are two instances of the file – one on disk and one on tape. Tape cartridge replication is optional and is scheduled according to an administrator policy.



The administrator can configure the system such that after a file has been securely written to tape, the instance stored on disk will be flushed (deleted) to release the disk space that was occupied by the file.

Files are available to users even if they have been flushed from disk and are only stored on tape. Flushing from disk does not affect the location of a file within the file system or make it inaccessible in any other way; the only impact of flushing is to increase the time taken to read the file because it first has to be retrieved from tape. After a file has been flushed from RAID, its off-line attribute bit is set and the file is still available from tape within the library. The Microsoft off-line bit changes network timeout periods to allow retrieval of the file from media with long access times.

On reading from tape, a file is automatically restored to RAID as it is simultaneously transferred over the network.

LTO Interchange with X1500 and X800 Systems



LTO tapes may be interchanged between a tape library managed by a SX Archive Server and a low cost X1500 or X800 LTO tape drive system running on a Windows 7 workstation.

This opens up a number of useful workflow options. For example the SX Archive system can be configured to create duplicate LTO tapes and, when full, one replica can be exported from the tape library and send to an offsite location having a X1500 or X800 system. This creates a low cost disaster recovery site. Another workflow option is to archive files to LTO tape using one or more X1500 or X800 systems,

finalize the tapes and then transfer the tapes to a tape library managed by a SX Archive Server. Many terabytes of files can be made available on the SX Archive Server within minutes.

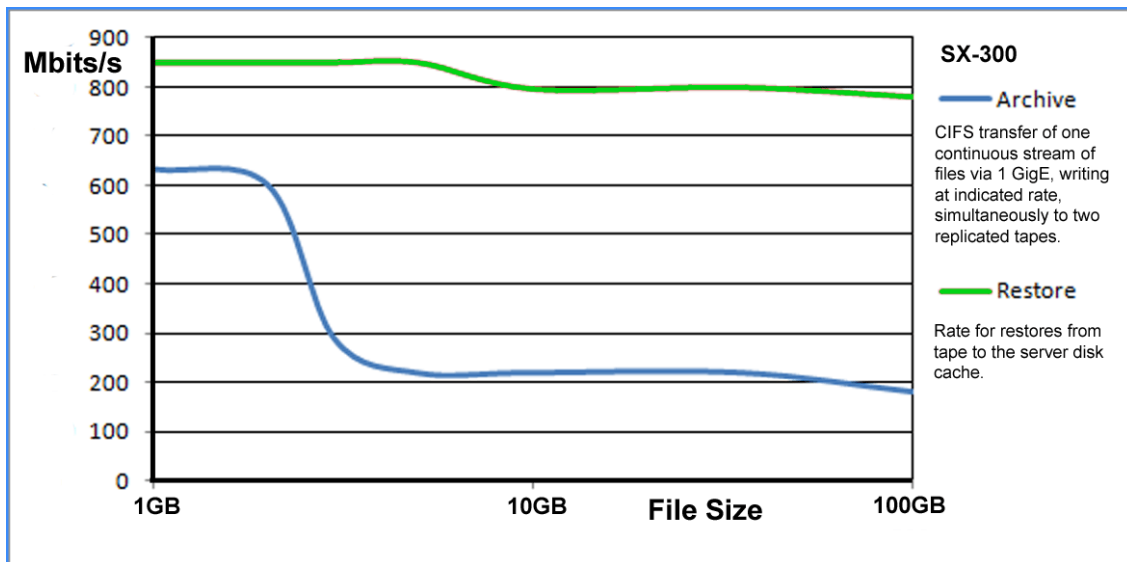
SX Archive Server Models

The SX Archive Servers are available in three models, each with separate mirrored boot disks:

Part Numbers	Performance	RAM	Processors	RAID	Archive Online Capacity
SX-300	Good	12 GB	Single Intel® Xeon® E5620 (4 core, 2.4 GHz)	SATA drives in RAID 50	2 TB Expandable to 6 TB
SX-400	High	32 GB	Two Intel® Xeon® E5640 (quad core, 2.66 GHz)	SAS drives in RAID 50	1.8 TB Expandable to 5.4 TB
SX-401	High				For use with external RAID

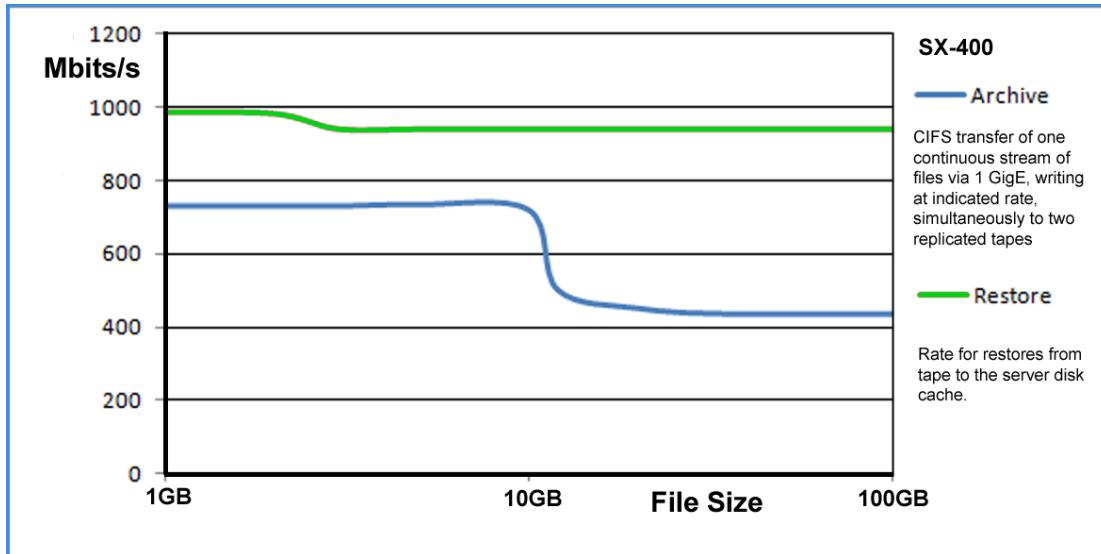
Performance – SX-300

Sustainable archive transfer rates depend on file size, as illustrated by the performance chart below.



The SX-300 is suitable for most applications and provides very high transfer rates when archiving files up to 2 GB in size and when restoring files of any size, as illustrated in the performance chart shown above. The SX-300 will archive up to 6 TB per day to replicated LTO-4 or LTO-5 tapes for file sizes up to 2 GB and up to 2 TB per day for larger files.

High Performance - SX-400/401



The SX-400 is ideal when archiving and restoring large quantities of large files. It is configured with 32 GB RAM, 450 GB dual port SAS drives in RAID 50 and 2 quad core processors to provide exceptionally high transfer rates for large files.

The SX-400 will archive up to 7 TB per day to replicated LTO-4 or LTO-5 tapes for file sizes up to 10 GB and up to 4 TB per day for larger files. These levels of performance are achieved using only a single stream of files; higher total transfer rates can be obtained when using multiple simultaneous streams of files.

The SX-401 model includes mirrored boot disks and is intended for use with an external RAID cache such as the HP P2000.

When even higher total transfer rates are required, a tape library may be partitioned into multiple logical libraries with each logical library having dedicated slots and tape drives. Each logical library is then managed by a SX Archive Server, creating a highly scalable total archive solution.

Supported Tape Libraries

SX Archive Servers support a wide range of tape libraries including from Dell, HP, IBM, Oracle/StorageTek, Overland Storage, Qualstar, Quantum, Sony and Spectra Logic. Please refer to the X64 Edition support list for a complete list of supported models.

Installation Specifications

	Archive Server
Dimensions (19" rack mount)	
Height	2U
Width (inches)	17.25
Depth (inches)	27.25
Power requirements	
Number of power supplies	1 or 2
Voltage (Volts AC)	100-240
Frequency (Hz)	50-60
Peak Power Requirement (Watts) each	548
Weight	
Approximate weight (lbs)	55
Temperature	
Ambient temperature range (°F)	40-90
Ventilation	The server takes air in the front and exhausts at the rear. Un-obstructed air flow should be provided.

Interface

	Archive Server
Network Connections	
Type	Four Gigabit Network Adapters as standard Two 10GBE ports available as option (HP NC522SFP HBA)
Network Protocols	
Supported protocols	CIFS/SMB and FTP

Included Items

The SX Archive Server includes:

- ❖ the 2U server
- ❖ XenData X64 Edition software and the XenData Alert Module pre-loaded
- ❖ SAS/SCSI/FC ports for connectivity to the selected tape library

The tape library, SAS/SCSI/FC cables to connect to the library, LTO cartridges, cleaning cartridges and barcode labels are not included and should be purchased separately.

Support

The SX Archive Server comes with 12 months of support. This includes system support from XenData via phone and email and next business day onsite support for the server hardware. In addition all XenData software updates are provide free of charge during the maintenance period.

Regional Availability

The SX Archive Servers are currently available only in North America.

Further Information

For further information, please contact XenData USA:

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