



Product Brief

SX-255 Archive Server for LTO



An SX-255 Archive Server manages a robotic LTO library creating a digital archive that is optimized for creative video and video surveillance applications. The SX-255 is compatible with a wide range of LTO robotic libraries including those using LTO-8 drives - the latest generation that delivers high capacity, high speed and 30 years cartridge lifetimes. The SX-255 systems scale to manage multiple PBs of LTO library capacity and will also manage an unlimited number of offline LTO cartridges.

The SX-255 includes a Cloud File Gateway that allows files to be stored on Azure Blob storage as an alternative to LTO. This may be used to share files with remote sites and to move files instantly offline for data protection purposes.

Introduction

The SX-255 archive server manages a robotic LTO library with up to four internal LTO drives. It is available in 10 standard configurations - supporting an LTO tape library with a maximum of two internal SAS or Fibre Channel LTO-8 drives.



The SX-255 runs XenData Archive Series software on a Windows Server operating system. Files are presented in a standard file/folder structure which is typically shared over the network. Files are transferred to and from the archive using either the standard Windows network protocol (CIFS/SMB) or FTP file transfers. In addition, files may be transferred locally. This non-proprietary approach to the interface means that the archive can be used simultaneously by multiple standard applications and it does not tie the user to any particular application.

In addition to the standard file/folder interface, the SX-255 provides an interface using an XML API. The XML instructions are sent and received from a network socket (port 3466) and include the ability to pull assets from a source location and push them back to that location. The XenData XML interface has been adopted by an increasing number of third party application providers.

The LTO cartridges written using the SX-255 are in either LTFS or TAR format. They are self-describing and may be transferred between systems running XenData software. The system supports a combination of LTFS and TAR cartridges: when configuring a pool of tapes, the administrator selects either TAR or LTFS as the cartridge format. With the LTFS format, cartridges may be transferred between the SX-255 and a wide range of systems available from different manufacturers.

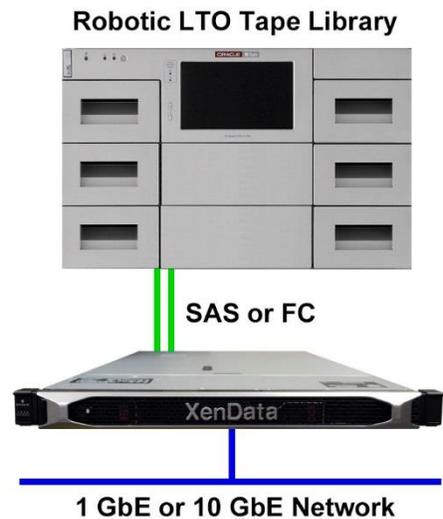
The SX-255 base model includes a solid-state system disk and a 6 TB disk cache which is used to enhance archive and restore performance and may also be used to retain selected files on disk. The base model SX-255 may be upgraded by adding up to two additional 6 TB cache disks. Upgrade options are two disks in a mirror configuration for redundancy and two or three disks in a striped configuration for higher capacities and performance. In addition, for the highest performance, the 6 TB disk may be replaced with three 800 GB high endurance SSDs.

Archive Configuration

The SX-255 connects directly to the LTO library via SAS or Fibre Channel cables.

It connects to an Ethernet network via 1 GbE or 10 GbE. The network share supports the standard Windows network protocol (CIFS/SMB) and FTP file transfers. The base SX-255 includes four 1 GbE network ports and a flexible LOM (LAN on motherboard) for an optional 10 GbE adapter. In addition, the SX-255 has a spare PCIe slot which may be used for an optional Fibre Channel interface card for connection to a SAN.

In addition to Ethernet and SAN connectivity, the SX-255 includes three USB 3.0 connections that may be used to locally connected storage devices allowing files to be transferred locally between the USB device and LTO.



Functionality

Standard File System Interface

The digital archive accepts all file types 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 drive.

XML Interface

In addition to the file system interface, an XML interface is provided. The XML instructions include the ability to pull assets from a source location and push them back to that location. The instructions are sent and received from a network socket (port 3466).

Standard Network Protocols

The solution is optimized for CIFS/SMB and FTP, as well as local file transfers.

Disk Cache Enhances Performance

The administrator defines policies for disk caching that can be tailored for different file types and folders.

Supported Tape Formats – LTFS and TAR

The system may be configured with tape pools using the LTFS or TAR format.

LTO Cartridge Replication

Automatically generates replica data tape cartridges that may be exported from the library for off-site retention.

Supports Near-line and Offline LTO

Manages LTO cartridges in a library and an unlimited number of cartridges taken offline.

End-to-End Verification

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.

Multiple Tape Pool Support

The software allows groups of files to be allocated to specified groups of LTO cartridges.

Dynamic Expansion of LTO Pools

The system will dynamically expand LTO cartridge pools 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 LTO (unless the files have been purged using a repack operation).

Partial File Restore

The XenData XML interface is available with partial file restore (PFR) based on timecodes. In addition, the XenData file system interface supports PFR based on byte offset.

Repack of LTO Cartridges

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

Supports WORM Tape

XenData systems support both standard rewritable cartridges and unalterable WORM cartridges.

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.

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.

System Upgrade

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 runs a Windows Server operating system and integrates fully with the Microsoft Windows security model based on Active Directory.

Cloud File Gateway

Allows files to be stored on Azure Blob storage as an alternative to LTO. This may be used to share files with remote sites and to move files instantly offline for data protection purposes.

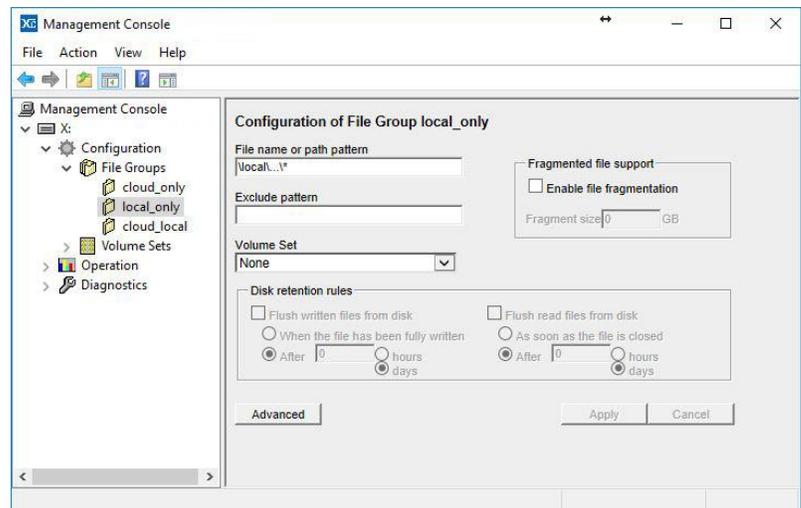
XenData File Management Policies

The system administrator defines policies that determine where files will be physically stored on the digital archive. These policies support tiered storage management and automatic LTO cartridge replication. The SX-255 supports three main levels of storage hierarchy:

- ❖ **Near-line disk** with one instance of a file on the disk cache and, in addition, there will typically be one or more instances on LTO. In this case, the file will be retrieved from disk when accessed over the network.
- ❖ **Near-line LTO** with at least one instance of a file on an LTO cartridge within the library and no instances on disk. When a file on near-line LTO is accessed over the network, the XenData software automatically transfers the file over the network directly from LTO in response to the network read request.
- ❖ **Offline** with no instances on disk and instances of a file on one or more LTO cartridges, all of which have been exported from the tape library.

The XenData file management policies are defined by the administrator using the XenData Management Console. Policies allow groups of files to be allocated to specified groups of LTO cartridges, or alternatively to Azure Blob storage. The SX-255 may have many different policies, tailored to the needs of the different file types and folders that are being archived.

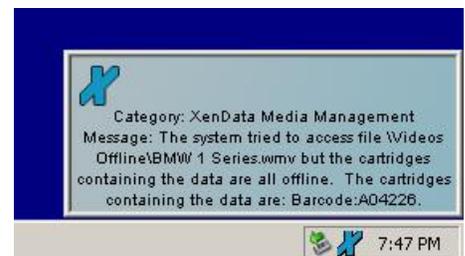
No matter where a file is held in the storage hierarchy, its position in the archive file/folder system does not change. When a file is flushed and it transitions from near-line disk to near-line LTO, the file path, file name and properties do not change, except the Microsoft offline attribute changes to identify that the file is no longer on disk. When a file moves from near-line LTO to being offline because the LTO cartridge on which it is stored is exported from the tape library or ejected from an external tape drive, the file also remains unchanged in the archive file system.



Offline LTO Management

An SX-255 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 library 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 file representation 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.



Third party applications that use a XenData API may also access information about offline cartridges and display barcode information within the application user interface.

Cloud File Gateway

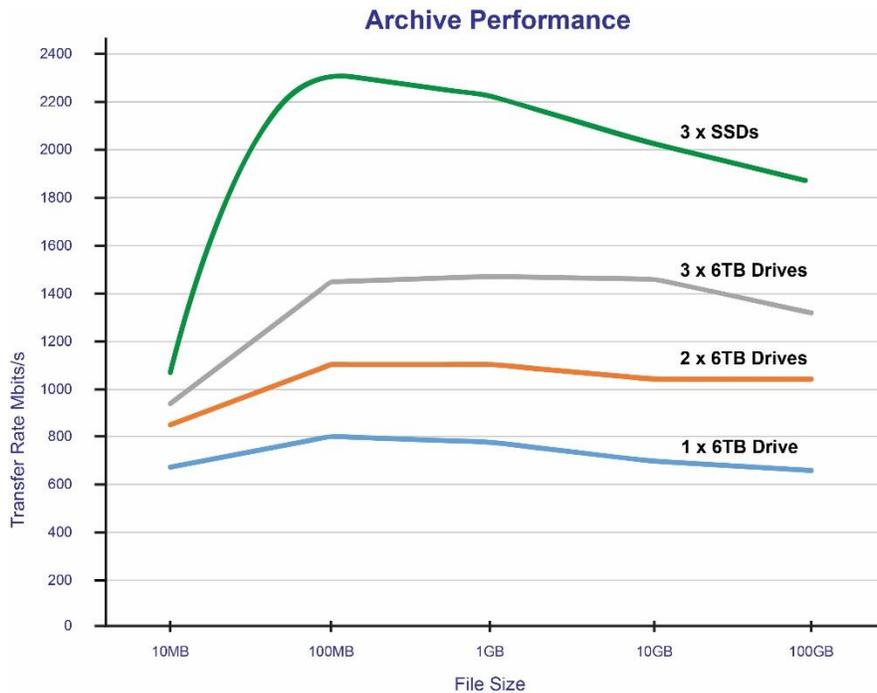
The SX-255 allows files to be stored on Azure Blob storage as an alternative to LTO. This complements the on-premises LTO storage and may be used for the following:

- ❖ Sharing files with remote sites. The files may be accessed remotely using another XenData Cloud File Gateway or Microsoft applications such as Azure Storage Explorer running on a Mac or a PC.
- ❖ Instantly move files to an offsite cloud location for data protection purposes.
- ❖ Copying files to Azure to allow them to be accessed from a DR site.

LTO Performance

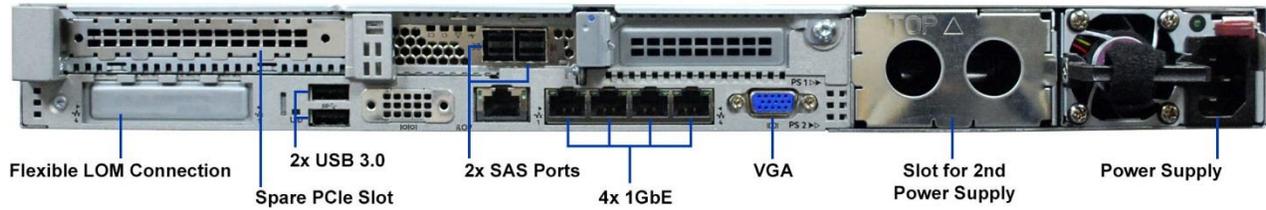
The SX-255 restores files at near to the maximum transfer rate supported by the LTO drive. In the case of LTO-7 and LTO-8, the restore rate is close to 2,400 Mbits/s.

The archive rate depends on the file size and the disk cache configuration. The graph below shows the sustainable transfer rate for file sizes in the range from 10 MB to 100 GB when writing to an LTO-8 drive with an LTO-8 or LTO-7 cartridge. Upgrading the number of drives in the cache configuration increases the archive performance as well as increasing the cache capacities. For the highest performance, the disk cache may be upgraded to SSD RAID.

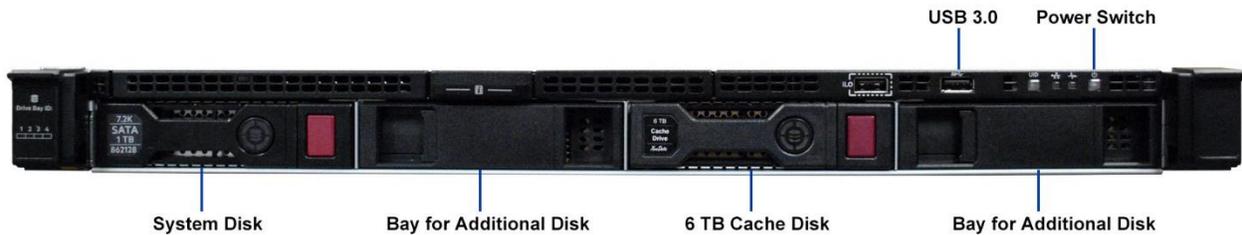


Connections

Rear (SAS versions shown)



Front (with Bezel Removed)



Specifications – Base Configurations

| | |
|---|--|
| Management software: | XenData Archive Series, LTO Edition and Cloud File Gateway Extension |
| Operating system: | Microsoft Windows Server 2012 R2 Standard Edition |
| Processor: | Intel® Xeon® 6-core processor |
| RAM: | 32 GB |
| System disk: | 1 TB SATA 7,200 rpm |
| Cache disk: | 6 TB SATA 7,200 rpm |
| Network connections: | 4 x RJ45 connectors; 1000BASE-T, 100-BASE-TX, 10BASE-T, |
| USB connections: | 2 x USB 3.0 (rear mounted); 1 USB 3.0 (front mounted) |
| SAS connections to library (SAS models only): | 2 x SFF-8644 Mini-SAS-HD connectors; 12 Gb/s SAS |
| FC connections to library (FC models only): | 2 x LC type connectors; 8 Gb/s |
| Spare PCIe slots: | 1 |
| Number of power supplies: | 1 (Optional 2 nd available) |
| Power: | 100-240V; 50-60 Hz; 6.2-4.1 Amp max |
| Operation temperature / humidity: | 50-95°F (10-35°C) / 8-90% non-condensing |
| Form factor / Dimensions (HxWxD): | 1U / 1.69" x 17.11" x 29.5" (4.29 cm x 43.46 x 74.98 cm) |
| Weight: | 30.36 lbs. (13.77 Kg) – 37 lbs. (16.78 Kg) |
| Rack rails: | Included |

SX-255 Models

The SX-255 is available in 10 base models, with either SAS or fibre channel library connections and licensed to support the following LTO library configurations:

| Model | XenData SKU | Library/Drive Connection | License Support |
|-------------|-------------|--------------------------|---|
| SX-255 -851 | 222851 | SAS | One external LTO drive with either SAS or USB connection |
| SX-255 -852 | 222852 | SAS | Two external LTO drives with either SAS or USB connections |
| SX-255 -853 | 222853 | SAS | One LTO-8 library with one internal LTO drive and up to 25 slots |
| SX-255 -854 | 222854 | SAS | One LTO-8 library with two internal LTO drives and up to 25 slots |
| SX-255 -855 | 222855 | SAS | One LTO-8 library with one internal LTO drive and up to 50 slots |
| SX-255 -856 | 222856 | SAS | One LTO-8 library with two internal LTO drives and up to 50 slots |
| SX-255 -863 | 222863 | FC | One LTO-8 library with one internal LTO drive and up to 25 slots |
| SX-255 -864 | 222864 | FC | One LTO-8 library with two internal LTO drives and up to 25 slots |
| SX-255 -865 | 222865 | FC | One LTO-8 library with one internal LTO drive and up to 50 slots |
| SX-255 -866 | 222866 | FC | One LTO-8 library with two internal LTO drives and up to 50 slots |

The models that support 50 slot libraries may be upgraded to support larger libraries by purchase of 20 slot license upgrades. Following initial purchase, the license may be upgraded at a later date.

A wide range of LTO tape libraries is supported. Please refer to the XenData web site for a complete and up to date list.

Upgrade Options

| XenData SKU | Description |
|--------------------|--|
| | Library Slot Upgrades |
| XAS-UPG-SX250-20LM | Library slot license upgrade for SX-255 to support an additional 20 LTO slots. Applicable above 50 slots. |
| | Connectivity Options |
| 101092 | Dual port 10 GbE SFP+ Flexible LOM network adapter pre-installed in SX-255. Optical transceivers (SKU 101081) not included. |
| 101093 | Dual port 10 GbE Flexible LOM network adapter for use with CAT6 or UTP cabling pre-installed in SX-255. |
| 101081 | SFP+ 10 Gb/s LC Short Range Transceiver for insertion in SKU 101092. Quantity 2 required to use both ports in the adapter. |
| 101023 | Fibre Channel adapter pre-installed in SX-255 for FC SAN connectivity. Provides two 8 Gb/s FC ports with LC type connectors. Uses one PCIe slot. |
| | Redundancy Options |
| 107320 | Additional power supply for SX-255, providing redundancy. |
| 222050 | Disk Redundancy Upgrade. Includes an additional 6TB cache disk and system disk which are pre-installed and configured as mirror disks. |
| | Performance Options |
| 222056 | SX-255 Disk Cache Upgrade. Includes an additional 6TB cache disk pre-installed and configured in RAID 0 (striped), taking the cache capacity to 12 TB. |
| 222057 | SX-255 Disk Cache Upgrade. Includes two additional 6TB cache disks pre-installed and configured in RAID 0 (striped), taking the cache capacity to 18 TB. |
| 222077 | SX-255 Disk Cache Upgrade. Replaces the 6 TB disk with three high endurance 800 GB SSDs in a RAID 0 configuration. |

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