



SXL-4205Q

LTO-8 Digital Archive

540 TB LTO Archive System
with 1 or 2 LTO-8 Drives



Functionality

- ✓ 540 TB library capacity
- ✓ 1 or 2 IBM LTO-8 Drives
- ✓ Manages Unlimited Offline LTO
- ✓ Standard File-Folder Interface
- ✓ CIFS/SMB and FTP Network Protocols
- ✓ Disk Cache for Exceptional Performance
- ✓ Writes to LTO in LTFS or TAR
- ✓ Replicates LTO Automatically
- ✓ End to End Verification
- ✓ Optimized File Restores
- ✓ Partial File Restore Support
- ✓ File and Folder Spanning
- ✓ Supports Multiple LTO Groups
- ✓ Extensive Archive Reports
- ✓ E-mail Alerts and On-Screen Notifications
- ✓ Backed by Excellent Customer Support

Overview

The SXL-4205Q system is a cost effective digital archive that is optimized for video files. It includes a XenData SX-255 Archive Server and a Qualstar Q48 robotic LTO library with 45 active slots, 3 mail slots for importing and exporting LTO cartridges and either one or two LTO-8 drives. The system has a network attached storage (NAS) architecture, connecting to the network via 1 GbE or 10 GbE.

The SX-255 Archive Server runs a Windows 2012 R2 operating system and XenData Archive Series software. It has a 2.4 TB to 18 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 LTO archive system runs automatically, driven by administrator defined policies. It will automatically create duplicate LTO cartridges which may be exported from the tape library and retained in an offsite location, providing strong data protection for your digital assets.

Great Application Compatibility

Files are presented in a standard file/folder structure and are written to and retrieved from the archive as though from a standard disk-based volume or network share. 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, an XML driven API is available which allows third party applications to move files to and from the archive and provide a tight integration.

These interface options mean that the system works with most applications used in video surveillance and creative video. Alternatively, video files may be archived and restored manually to a file-folder structure using Windows Explorer or FTP utilities.

Key Functionality and Benefits

Standard File 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-based volume or network share. **Benefit:** works with most applications natively.

Disk Cache

The disk cache delivers high performance in a system that combines the access times of disk with all the dependability and cost-effectiveness of tape.

LTO Cartridge Replication

The software automatically generates replica LTO cartridges that may be exported from the library for off-site retention.

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 and in surveillance applications.

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.

File Mover API

In addition to the file system interface, an XML driven API is available. 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

applications to move files to and from the archive and provides a tight integration with the application.

End to End Verification

A read head that follows the write head in the LTO drive 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. **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 cartridge swapping and 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 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.

Easy Migration from One Generation of LTO to Another

Repack function allows seamless migration from one LTO generation to another.

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. **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. **Benefit:** useful archive management tool.

Cloud File Gateway

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

Industry Standard File Security

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

Policy Driven File Management

Three Storage Levels

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

Online with one instance of a file on disk 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.

Near-line with at least one instance of a file on an LTO cartridge within the library and no instance on disk. When a near-line file is accessed, the system automatically transfers the file from LTO.

Offline with no instance on disk and one or more instances of a file on LTO cartridges, all of which have been exported from the tape library. If there is an attempt to read an offline file, the system issues an email alert or an on-screen notification.

Data protection is achieved by automatically generating multiple instances of a file. The archive system can automatically produce copies of LTO cartridges which may be exported from the tape library and retained off-site.

Tailored Policies

An SXL-4205 system may have many different policies, tailored to the needs of the different file types and folder contents 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 disk. As soon as the file has been successfully written to disk, it is put into a queue to be written to a primary LTO cartridge. After completion of this operation, there are two instances of the file – one on disk and one on LTO. LTO cartridge replication is optional and may be set to occur at the same time as the primary is written or may be scheduled.

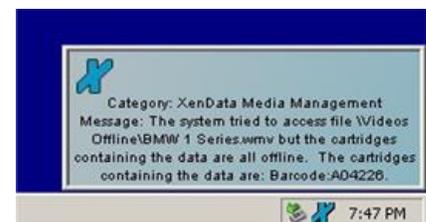
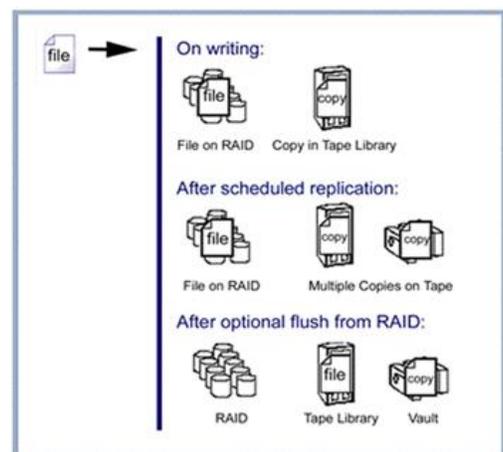
The administrator can configure the system such that after a file has been securely written to LTO, the instance stored on disk will be flushed (deleted and replaced by a file representation, often called a stub file) to release the disk space that was occupied by the file. Files are available to users even if they have been flushed from disk and are only stored on LTO. 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 accessed on LTO. After a file has been flushed from disk, its off-line attribute bit is set and the file is still available from LTO within the library. The Microsoft off-line bit changes network timeout periods to allow retrieval of the file from storage types with long access times.

On reading from LTO, a file is automatically restored to disk as it is simultaneously transferred over the network. This use of caching for restores ensures that the LTO tape drives provide fast transfers even if the network connection becomes slow.

Offline File Management

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 unlimited. 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 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.



Intelligent Cartridge Management

Importing and Exporting Cartridges

LTO cartridges may be bulk loaded and unloaded using the tape magazines or alternatively the mail slot may be used to import or export up to three cartridges at a time. The mail slot allows import and export of cartridges without taking the robotic library offline.

Intelligent Barcode Management

The LTO library includes a barcode reader which automatically scans all LTO cartridges and makes the barcode information available to the SX-255 Server. Barcodes are the ideal way to keep track of LTO cartridges in an archive: the barcode is readable by human operators and machine readable by the barcode reader in the library.

The XenData system automatically writes the barcode information to an in-cartridge memory chip within each LTO cartridge. This allows the barcode to be available even when the cartridge has been exported from the library and is being used within a stand-alone LTO drive which does not have a barcode reader.

One of the key features of a SXL-4205 system is LTO cartridge replication. The system can be configured to automatically create replica cartridges for data protection purposes. This capability is typically used to create replica cartridge pairs and after a pair of cartridges becomes full, one of the duplicate cartridges is exported from the library and stored in a secure offsite location. The XenData system will automatically pair A-B barcode sequences to tape replicas, making for easy management of the replica cartridges.

Cartridge Compatibility

Compatible with LTO-8 and LTO-7 Cartridges

The archive system is compatible with LTO-8 and LTO-7 cartridges, and provides capacities per cartridge from 6 TB to 12 TB:

12 TB – write/read compatible with LTO-8 rewritable cartridges that have a native capacity of 12 TB.

9 TB – write/read compatible with LTO-7 rewritable cartridges which have been formatted using the LTO-8 SXL-4205 system or another LTO-8 drive to provide 9 TB of native capacity.

6 TB – write/read compatible with LTO-7 rewritable cartridges which have been formatted using an LTO-7 or LTO-8 drive to provide 6 TB of native capacity.

Quoted capacities are without compression. When using compressible files, the capacities typically increase by X 2.5 per cartridge.

In addition, the system is write/read compatible with WORM LTO-7 cartridges.

Note: 1 TB equals 1 x 10E12 bytes.

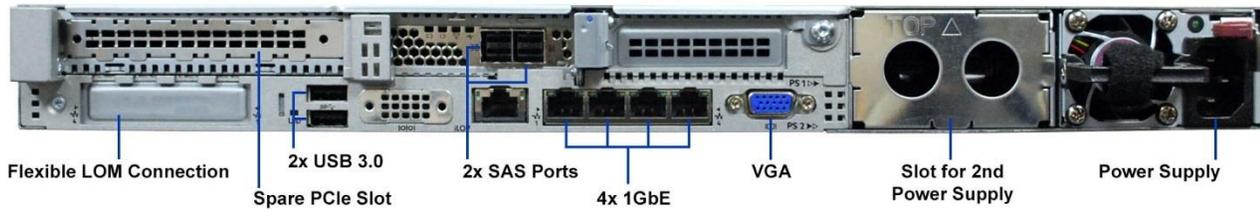
Writes using LTFS and TAR Formats

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.

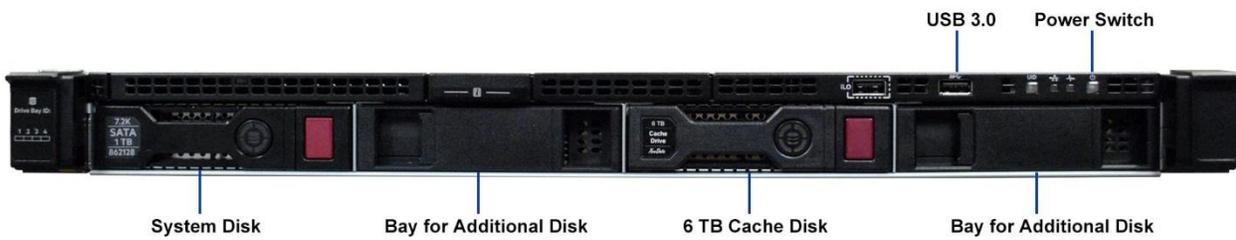
The choice of cartridge file system format is important when transferring cartridges from one system to another. The LTFS format was developed by IBM and announced in 2010. Since then, it has been widely adopted, making it an exchange standard which allows cartridges to be moved between systems created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

Server Connections

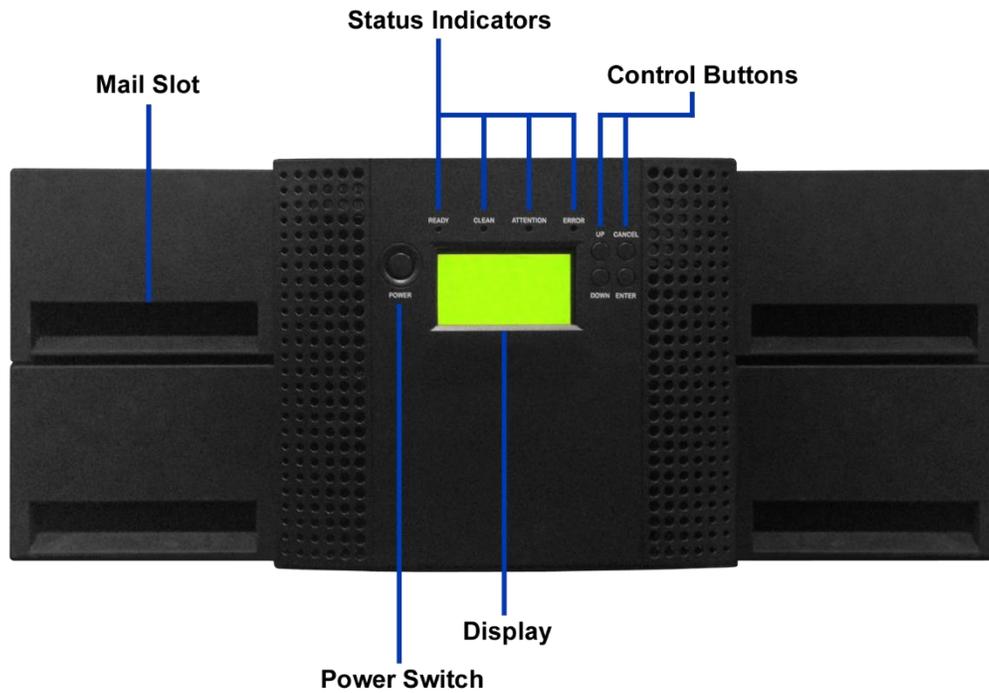
Connections to the rear of the SX-255 archive server are shown below:



The front of the SX-255 includes a USB 3.0 connection, shown below:



LTO Library Front Panel



Base Models

XenData SKU	Description
224031	Model SXL-4205Q-1xLTO8. Complete LTO-8 archive system with 540 TB near-line LTO and unlimited offline capacity. Consists of XenData SX-255 Archive Server, Qualstar Q48 library with one LTO-8 drive, 3 mail slots and 45 active slots.
224032	Model SXL-4205Q-2xLTO8. Complete LTO-8 archive system with 540 TB near-line LTO and unlimited offline capacity. Consists of XenData SX-255 Archive Server, Qualstar Q48 library with two LTO-8 drives, 3 mail slots and 45 active slots.

Specifications

LTO-8 Library

Library Type:	Qualstar Q48
Tape drive type:	IBM LTO-8 half-height
Drive interface:	SFF-8088 connections; 6 Gb/s SAS - 2m cable(s) for connection to SX-255 are included
Transfer rate – writing and reading:	300 Mbytes/s native per drive
Number of tape drives:	1 or 2
Number of active cartridge slots:	45
Number of mail slots:	3
Total number of slots (mail and active slots):	48
Barcode reader:	Included
Interface to Medium Changer:	ADI
Mean Swaps Between Failures:	Greater than 2 million robot load/unload cycles
Number of power supplies:	1 – a second redundant power supply is available as an upgrade option
Voltage:	100-240VAC; 50-60Hz
Power:	300 W
Dimensions & Weight	
Rack form factor:	4U, 29.13 inches (740 mm) deep
Weight:	47 lbs (21.3 Kg)
Dimensions (HxWxD):	6.9" x 17.6" x 29.13" (175mm x 447mm x 740mm)
Rack Rails:	Included

Specifications

SX-255 Archive Server



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:	2 x SFF-8644 Mini-SAS-HD connectors; 12 Gb/s SAS
Spare PCIe slots:	1
Number of power supplies:	1 – a second redundant power supply is available as an upgrade option
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

SXL-4205Q Upgrade Options

XenData SKU	Description
	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 the spare PCIe slot.
	Redundancy Options
107320	Additional power supply for SX-255, providing dual AC power input.
108082	Additional power supply for robotic library, providing dual AC power input.
222850	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.

Contact Us

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