

## XenData® Product Brief:

### SX-250 Server for Optical Disc Archive Libraries



An SX-250 Archive Server manages a Sony Optical Disc Archive library creating a digital archive that is suitable for all file types but is optimized for video files. The SX-250 systems scale to 196.5 TB of near-line capacity.

## Introduction

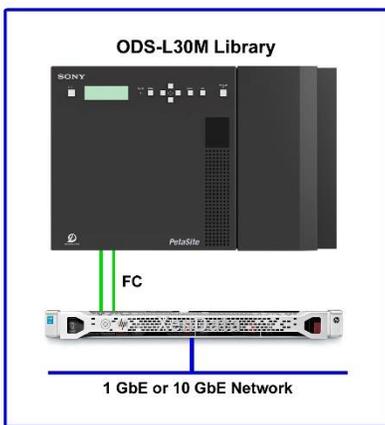
The SX-250 archive server manages a Sony ODS-L30M library with up to 131 slots and two internal Optical Disc Archive drives, providing up to 196.5 TB of near-line capacity. The SX-250 will also manage an unlimited number of offline optical cartridges that have been exported from the library.



The SX-250 includes a 6 TB disk cache for enhanced performance. It runs XenData6 Server software on a Windows Server 2012 R2 Essentials operating system. Files are presented in a standard file/folder structure which may be shared over a network. This non-proprietary approach to the interface means that the archive can be used simultaneously by multiple standard applications. It is compatible with most applications including most media asset management systems.

The SX-250 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-250 may be upgraded to mirror each of these disks, providing redundancy for enhanced availability.

## Archive Configuration

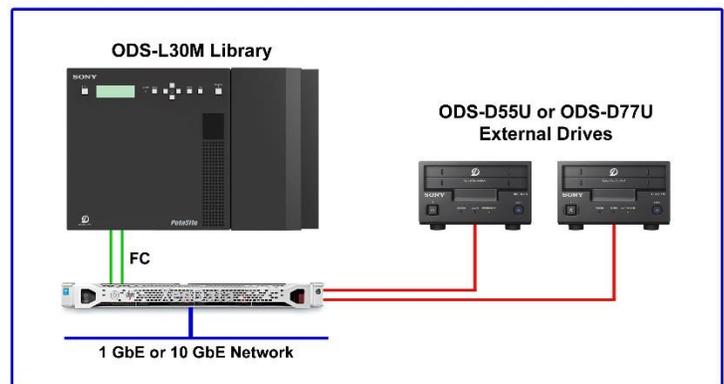


The SX-250 connects directly to the ODS-L30M library via one or two Fibre Channel cables.

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-250 includes two 1 GbE network ports and a spare PCIe slot which may be used for an optional 10 GbE interface card. Alternatively the PCIe slot may be used for an optional Fibre Channel interface card for connection to a SAN.

In addition to Ethernet and SAN connectivity, the SX-250 includes two USB 3.0 connections that may be used to connect local storage devices such as USB connected hard drives, allowing files to be transferred locally between the USB device and Optical Disc Archive cartridges.

The SX-250 also supports up to two external Optical Disc Archive drives. Having an external drive connected to the system is particularly useful when the system is being used with offline cartridges, as the external drives make it very easy to bring content back online. The Sony ODS-D55U and ODS-D77U external drive models are supported.



## Functionality

- ❖ **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 drive.
- ❖ **Windows and Mac Compatibility** - Windows and Apple OS X clients are natively supported without need for loading any client software.
- ❖ **Standard Network Protocols** - The solution is optimized for CIFS/SMB and FTP file transfers.
- ❖ **Manages Near-line Disk, Near-line & Offline Optical Cartridges** - The administrator defines policies for disk caching that can be tailored for different file types and folders.
- ❖ **Self-Describing Optical Cartridges** - Each cartridge contains all the file system metadata necessary to recover all the files stored on it.
- ❖ **Multiple Cartridge Pool Support** - The software allows groups of files to be allocated to specified groups of optical cartridges. The Administrator defined policies can be used to group related files together on the same set of cartridges.
- ❖ **Dynamic Expansion of Optical Cartridge Pools** - The system will dynamically expand optical 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 optical disc swapping within the optical disc archive cartridge.
- ❖ **File Version Control** - The software provides comprehensive file version control. Deleted files and old file versions may be restored from optical cartridges (unless the files have been purged using a repack operation).
- ❖ **Repack of Optical Cartridges** - This copies only current files, excluding deleted files and old versions of files, to new optical cartridges. Benefits: permits recovery of capacity from rewritable optical cartridges. Note that this functionality is not available when using WORM cartridges.
- ❖ **Transfer of Content between Systems** - Export and import functions allow content to be easily transferred from one location to another.
- ❖ **Supports WORM Cartridges** - XenData systems support both standard rewritable cartridges and unalterable WORM cartridges. The use of unalterable WORM 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.
- ❖ **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 cartridge barcode locations that match a user-defined search term. The reports may be exported to Excel for further analysis.
- ❖ **Industry Standard File Security** - The file server runs Windows Server 2012 R2 Essentials Edition and 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).

SX-250 Archive Servers supports three main levels of storage hierarchy:

- ❖ Online with one instance of a file on disk and, in addition, there will typically be an instance on an optical cartridge. In this case the file will be retrieved from disk when accessed over the network.
- ❖ Near-line with one instance of a file on an optical cartridge within the library and no instance on disk. When a near-line file is accessed, the cartridge containing the requested file is automatically loaded into an available optical drive and then the XenData software automatically transfers the file over the network to meet the read request. In addition, the file is transferred to disk cache in case the network transfer is slow. This ensures that the optical drive is freed as soon as possible to perform other tasks.
- ❖ Offline with no instance on disk and an instance of a file on an optical cartridge which has been exported from the Optical Disc Archive library.

An SX-250 Archive Server may have many different policies, tailored to the needs of the different file types that are being archived. 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 an optical cartridge. After completion of this operation, there are two instances of the file – one on disk and one on optical.

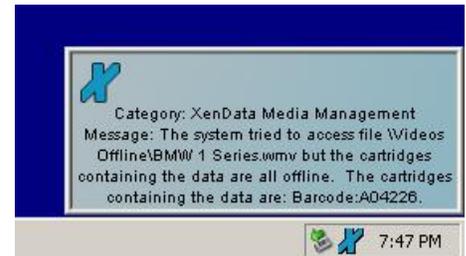
The administrator can configure the system such that after a file has been securely written to an optical cartridge, the instance stored on disk will be flushed (deleted and replaced by a sparse file, often called a stub file) to release the disk space that was occupied by the file. Files are available to users even if they have been flushed from disk and are only stored on optical cartridges. 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 an optical cartridge. After a file has been flushed from disk, its offline

attribute is set and the file is still available from optical cartridges within the library. The Microsoft offline attribute changes network timeout periods to allow retrieval of the file from media with long access times.

## Offline Cartridge Management

The SX-250 manages an unlimited number of optical 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 optical 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 optical 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 cartridge contains the requested file. This notification allows the correct cartridge to be easily identified and then imported back into the optical library. The file will then be automatically restored when the read request is retried.



The SX-250 includes four utilities to keep track of the relationship between files in the file system and their physical storage locations:

- XenData History Explorer, a plug-in to Windows Explorer, provides a file system view of the archive which identifies the physical locations of all instances of all files including old versions of files and deleted files. It identifies the barcodes of all cartridges that contain a particular file.
- XenData Volume View, a plug-in to Windows Explorer, allows the user to browse the file and folder structure stored on any optical cartridge.
- XenData Cartridge Contents Reports which list the contents of any cartridge and allows export of the report to an Excel spreadsheet. This is illustrated opposite.
- XenData File Search Reports which list all files that meet user-specified criteria and identify the barcodes of the cartridges that contain those files. The results of this report may also be exported to Excel.

No	File Name	Generation	Version	File Size (bytes)	Date Archived	Type
1	/archive1/venice/Venice01/002632433169_Venice Toma to Zaccaria_May_2006.avi	0	1	1,487,700,480	Nov 01 2013 17:17	Overwritten
2	/archive1/venice/Venice01/002645458536_Venice taking the bus_May_2006.avi	0	1	989,532,160	Nov 01 2013 17:17	Overwritten
3	/archive1/venice/Venice01/002678933456_Venice Grand Canal_May_2006.avi	0	1	411,132,928	Nov 01 2013 17:17	Overwritten
4	/archive1/venice/Venice01/002632433169_Venice Toma to Zaccaria_May_2006.avi	0	2	1,487,700,480	Nov 01 2013 17:18	Deleted
5	/archive1/venice/Venice01/002645458536_Venice taking the bus_May_2006.avi	0	2	989,532,160	Nov 01 2013 17:18	Current
6	/archive1/venice/Venice01/002678933456_Venice Grand Canal_May_2006.avi	0	2	411,132,928	Nov 01 2013 17:18	Current
7	/archive1/venice/Venice02/002632433169_Venice Toma to Zaccaria_May_2006.avi	0	1	1,487,700,480	Nov 01 2013 17:18	Current
8	/archive1/venice/Venice02/002645458536_Venice taking the bus_May_2006.avi	0	1	989,532,160	Nov 01 2013 17:18	Current
9	/archive1/venice/Venice02/002678933456_Venice Grand Canal_May_2006.avi	0	1	411,132,928	Nov 01 2013 17:18	Current
10	/archive1/venice/Venice03/002632433169_Venice Toma to Zaccaria_May_2006.avi	0	1	1,487,700,480	Nov 04 2013 08:08	Current
11	/archive1/venice/Venice03/002645458536_Venice taking the bus_May_2006.avi	0	1	989,532,160	Nov 04 2013 08:08	Current

## Optional Integration Modules for Creative Video Applications

Some applications used for creative video do not use a file system interface for archiving. To provide compatibility with these applications or to provide tighter integration, especially for management of offline cartridges, XenData offers integration modules that provide archive and restore transfers under control of an API. Integration modules which run on the SX-250 server are available for the following applications:

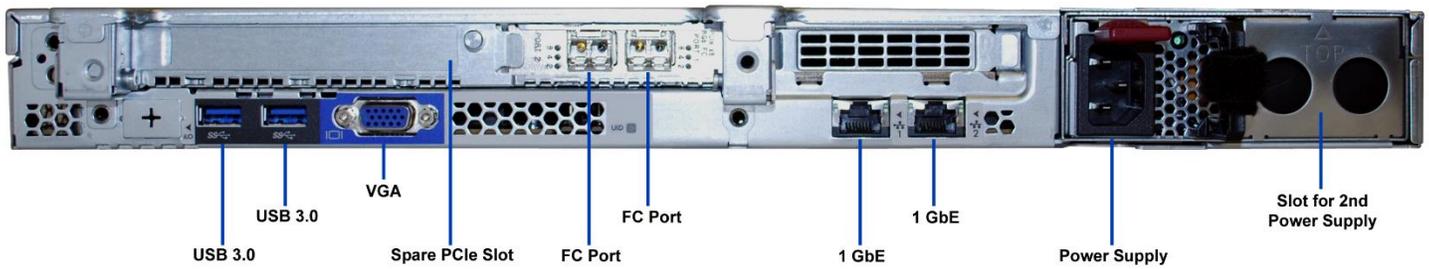
- ❖ Avid Interplay Production
- ❖ Avid project archiving
- ❖ Axle Video's MAM
- ❖ CatDV from Squarebox Systems
- ❖ Harmonic Media Application Server

## Network Integration

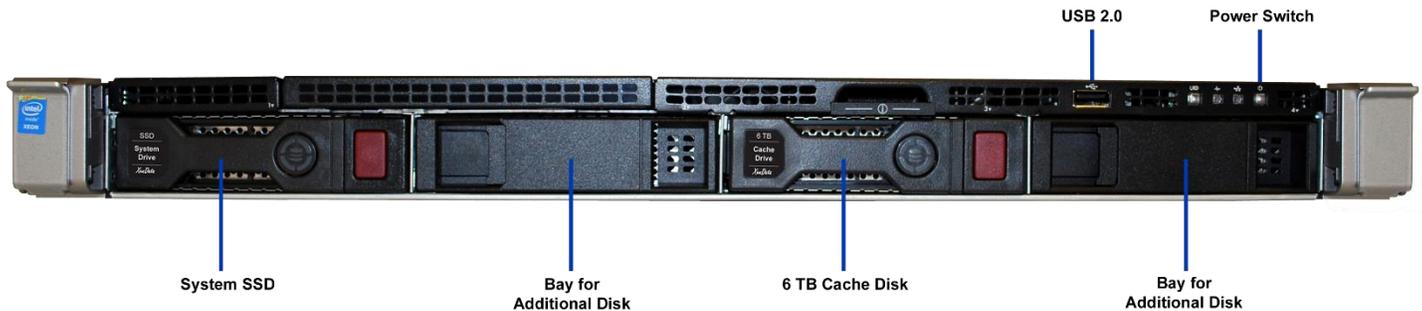
The SX-250 runs Windows Server 2012 R2 Essentials which means it can be deployed in a Workgroup or as the domain controller in an Active Directory domain. However, it cannot be installed as a domain member in a pre-existing Active Directory domain. If this is required, the SX-250 should be upgraded to Windows Server 2012 R2 Standard Edition.

## 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:



## SX-250 Specifications – base configuration

The SX-250 is available in two models with the same base configuration hardware. The difference between the two models is the supported ODS-L30M library configuration, as described below.

- ❖ XenData SKU 222021: SX-250 to support an ODS-L30M library with 30 slots and 1 or 2 Optical Disc Archive internal drives. The server will also support 1 or 2 external Optical Disc Archive drives connected via USB 3.0. Sony external drive models ODS-D55U and ODS-D77U are supported.
- ❖ XenData SKU 222022: SX-250 to support an ODS-L30M library with up to 131 slots and 1 or 2 Optical Disc Archive internal drives. The server will also support 1 or 2 external Optical Disc Archive drives connected via USB 3.0. Sony external drive models ODS-D55U and ODS-D77U are supported.

The specification for these two base-configuration models is as follows:

Software	
Archive management software:	XenData6 Server
Notification software:	XenData Alert Module
Operating system:	Microsoft Windows Server 2012 R2 Essentials

Hardware	
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 (rear mounted):	2 x USB 3.0
USB connection (front mounted):	1 x USB 2.0
FC connections to library:	2 x LC type connectors; 8 Gb/s

Number of spare PCIe slots:	1
Number of power supplies:	1
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 434.6 x 607.6mm)
Weight:	25.4 lbs (11.5 Kg)
Rack rails:	Included

## Upgrade Options

Upgrade options for the SX-250 are listed below:

XenData SKU	Description
	<b>Connectivity Options</b>
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.
	<b>Redundancy Options</b>
222010	Additional power supply for SX-250, providing redundancy.
222050	Disk Redundancy Upgrade. Includes an additional 6TB cache disk and system SSD which are pre-installed and configured as mirror disks.
	<b>Performance Options</b>
222056	SX-250 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-250 Disk Cache Upgrade. Includes two additional 6TB cache disks pre-installed and configured in RAID 0 (striped), taking the cache capacity to 18 TB.
222051	32 GB of additional RAM pre-installed in the SX-250, taking the total RAM capacity to 64 GB. Upgrading the RAM is useful when additional applications are running on the SX-250.
	<b>Operating System Upgrade</b>
111006	Upgrade of operating system for SX-250 or DX-240 from Windows Server 2012 R2 Essentials to Windows Server 2012 R2 Standard Edition. This is required if the server is to be installed as a member of an existing Windows Domain.

## Support

The SX-250 Archive Server comes with 12 months of support. This includes system support from XenData via phone and email and onsite support for the server hardware. In addition all XenData software updates are provided free of charge during the maintenance period.

## Additional Information

For further information, please contact XenData.

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