

XenData® Product Brief:

SX-550 Series Servers for Sony Optical Disc Archives



The SX-550 Series of Archive Servers creates highly scalable Optical Disc Digital Video Archives that are optimized for broadcasters, video production companies, post-production and media operations.

Overview

A XenData SX-550 Series Archive Server manages one or more Sony Optical Disc Archive (ODA) libraries and RAID. It provides a highly scalable network attached storage device where files are written to ODA cartridges and disk.

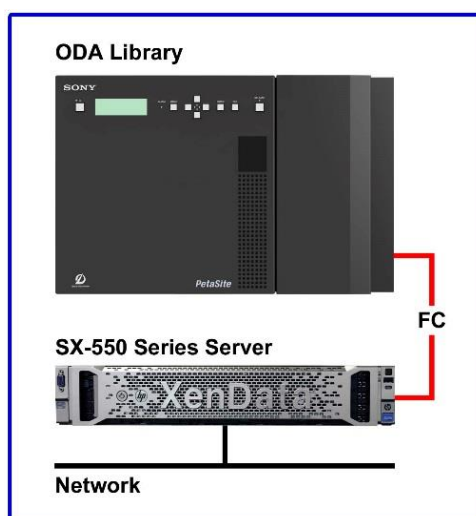


SX-550 Archive Servers run a Windows Server 2012 R2 operating system and combine two leading products: HP DL380 Gen 9 server hardware and XenData6 Server software. The SX-550 Series is offered in five standard configurations, each optimized for video archive applications.

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 asset management, automation or NLE system.

In addition to the standard file/folder interface, the SX-550 provides an object storage 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 object storage interface has been adopted by an increasing number of media asset management providers. It provides a rich interface with efficient data flows.

Archive Configuration



The SX-550 Series Archive Server connects to a Sony ODS-L30M library via multiple Fibre Channel connections. Prior to shipment from XenData, the SX server is configured to meet the specific connectivity requirements of the chosen ODA 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 server may also be connected to a SAN via Fibre Channel or Ethernet.

The SX-550 includes disk cache (or manages external RAID) which is used to enhance archive and restore performance and may also be used to retain selected files online. The cache

uses SAS disk drives in a high performance RAID 50 configuration or high endurance SSDs, depending on the model.

Functionality

All SX-550 Series Archive Servers provide the following 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.
- ❖ **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 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 file transfers.
- ❖ **Manages Nearline Disk, Nearline & Offline ODA Cartridges** - The administrator defines policies for RAID caching that can be tailored for different file types and folders.
- ❖ **Self-Describing ODA Cartridges** - Each ODA 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 file to be allocated to specified groups of ODA cartridges. The Administrator defined policies can be used to group related files together on the same set of cartridges.
- ❖ **Dynamic Expansion of ODA Pools** - The system will dynamically expand ODA 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 ODA (unless the files have been purged using a repack operation).
- ❖ **Repack of ODA Cartridges** - This copies only current files, excluding deleted files and old versions of files, to new ODA cartridges. Benefits: permits recovery of capacity from rewritable ODA 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 ODA 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 Standard 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-550 Series 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 ODA. 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 ODA cartridge within the library and no instance on disk. When a near-line file is accessed over the network, the XenData software automatically transfers the file from ODA to disk cache. As soon as the file transfer to disk commences, the file transfer over the network also starts.
- ❖ Off-line with no instance on disk and an instance of a file on ODA cartridges which has been exported from the ODA library.

An SX-550 Series 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 ODA cartridge. After completion of this operation, there are two instances of the file – one on disk and one on ODA.

The administrator can configure the system such that after a file has been securely written to ODA, 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 ODA. 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 ODA. After a file has been flushed from disk, its off-line attribute bit is set and the file is still available from ODA within the library. The Microsoft off-line bit changes network timeout periods to allow retrieval of the file from media with long access times.

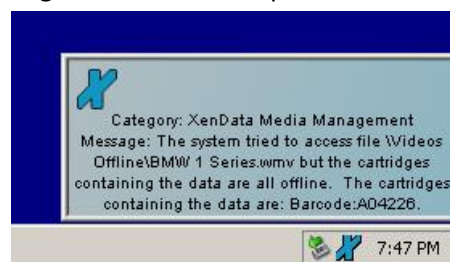
On reading from ODA, a file is automatically restored to disk as it is simultaneously transferred over the network. This use of caching for restores ensure that the ODA drives provide fast transfers even if the network connection becomes slow.

Offline ODA Management

The SX-550 Series manages an unlimited number of ODA 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 ODA 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 ODA 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 ODA cartridge contains the requested file. This notification allows the correct cartridge to be easily identified and then imported back into the ODA library. The file will then be automatically restored when the read request is retried.

The SX-550 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 ODA 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

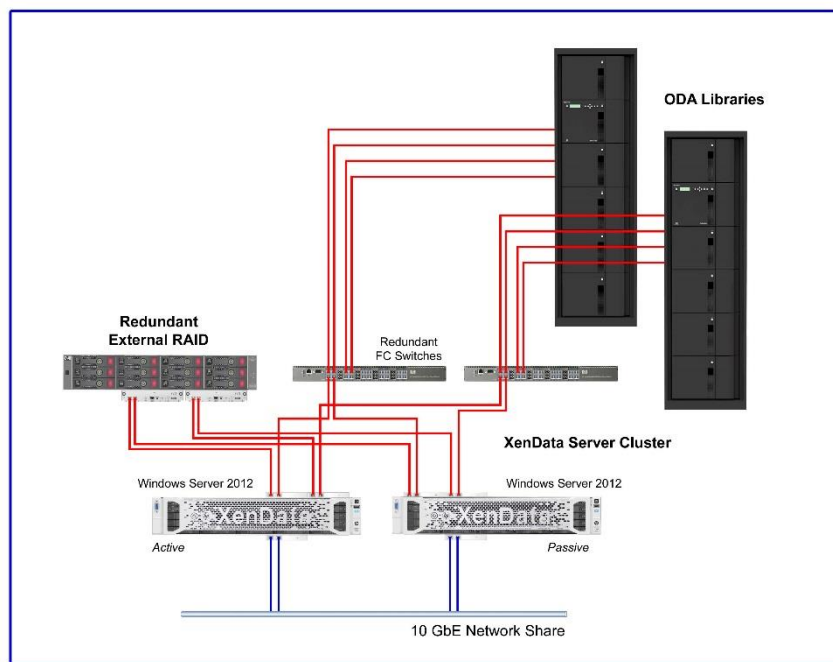
SX-550 Series Archive Server Models

The SX-550 Series Archive Servers are available in five models. Four have a non-clustered configuration:

Part Numbers	RAM	Processors	PCIe slots	Base RAID Configuration	RAID Controller Cache	Base Archive RAID Capacity	Max Archive RAID Capacity
SX-551	32 GB	Single Xeon® 6 core processor	3	6 x 1.2 TB SAS drives in RAID 50	2 GB	4.8 TB	26.4 TB
SX-552	64 GB	Two Xeon® 10 core processors	6	8 x 1.2 TB SAS drives in RAID 50	2 GB	7.2 TB	26.4 TB
SX-553	64 GB	Two Xeon® 10 core processors	6	For use with external RAID	N/A	Determined by external RAID	Determined by external RAID
SX-554	64 GB	Two Xeon® 10 core processors	6	8 x 800 GB High Endurance SSDs in RAID 5	N/A	5.6 TB	18.4 TB

The SX-555 is a server cluster which provides high availability. It supports one or more ODA libraries connected via fibre channel and includes two servers running Windows Server 2012 R2 in a clustered configuration with a fully redundant RAID cache. The system may be configured with two ODA libraries, for additional redundancy.

Example SX-555 Configuration with two ODA Libraries



SX-550 Installation Specifications

	SX-550 Series Server
Dimensions (19" rack mount)	
Height	2U
Width (inches)	17.54
Depth (inches)	26.75
Power requirements	
Number of power supplies	2
Voltage (Volts AC)	100-240
Frequency (Hz)	50-60
Peak Power Requirement (Watts) each power supply	800
Weight	
Max weight (lbs)	51.5
Ventilation	The server takes air in the front and exhausts at the rear. Un-obstructed air flow should be provided.

SX-550 Interface

	SX-550 Series Archive Server
USB Connections	
Rear	2 x USB 3.0
Front	1 x USB 3.0
Network Connections	
Standard	Four Gigabit Network Adapters are supplied as standard
Option	Dual 10 Gb/s ports may be added
Network Protocols	
Supported protocols	CIFS/SMB and FTP

Support

The SX-550 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 provide free of charge during the maintenance period.

Further Information

For further information, please contact XenData.

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