



## DX-Series:

# Multi-Tiered Active Archive that Scales to 240 TB of RAID plus Petabytes of LTO or Optical Disc

DX-Series archives store files on RAID and either LTO or optical disc – with all content presented as a single volume. The physical location of files is intelligently managed by administrator defined policies.

The primary storage tier – RAID – is available with capacities that range from 120 TB to 240 TB.

The secondary tier can scale to multiple petabytes and may be one or more robotic LTO or Sony optical disc archive libraries.

For the lowest cost per TB, the system manages a third tier – offline LTO or optical cartridges that have been exported from a library.



### Storage Tiers

**Primary tier:** RAID60

RAID capacities from 120 TB to 240 TB

**Secondary tier:** LTO or ODA

Option for multiple LTO copies

**Third tier:** externalized LTO/ODA

Managed via cartridge barcodes

### DX-Server

Windows Server 2012 R2

10 GbE Interface Options

Optimized for Video Files

### Overview

#### Simplified Storage

XenData DX-Series systems provide simplified archiving: they manage three tiers of physical storage but present all the files in a single logical volume. By using a single file system, the DX-Series avoids artificial segmentation of your storage space.

The DX server has a NAS architecture and runs a Windows Server 2012 R2 operating system and is fully compliant with the Microsoft security model – making for easy integration into an existing Windows environment.

#### Scalable

The primary disk tier is available with 24, 34 or 44 disks, with 6 TB individual disk capacities, providing usable RAID capacities from 120 TB to 240 TB. If you start with 24 or 34 disks, the capacity may be increased by adding additional disks up to the maximum of 44.

The secondary storage tier may be an on-premises expandable LTO or optical library. Whichever you choose, the secondary storage can be easily expanded. Also by exporting LTO or optical cartridges from the library, the capacity expansion is unlimited, as the system will manage any number of externalized cartridges.

#### Great Compatibility

The DX-Series systems have great compatibility with a wide range of media and entertainment applications including Avid Interplay, axle Video MAMs, CatDV from Squarebox Systems, Dalet MAMs, eMAM, Metus MAM, MXFserver and Parking from Marquis Broadcast.

## Interfaces

Whether you select the LTO or Optical archive option, the archive volume has two interfaces for writing and reading files:



- ❖ **File – Folder Interface** This provides a single file system that is presented as a logical drive letter on the Windows server. It may be accessed locally or shared over the network using CIFS/SMB or FTP. It supports manual archiving using Microsoft File Explorer, FTP and many other file management utilities. It also gives broad compatibility with a wide range of third party applications.
- ❖ **API Driven Data Mover** This interface obtains xml instructions from third party applications via a network socket. It may be used to pull files, or groups of files, to the archive from another local or network location. Similarly, it can push files or groups of files from the archive to another local or network location. In addition, it provides file metadata, such as the barcodes of LTO or optical cartridges that contain a specified file. This interface is used by many third-party applications to provide a tight integration with the archive.

These two interfaces may be used simultaneously. For example, a media asset management system may use the API to move files at the same time as the file-folder interface is used to archive and restore different content.

## Storage Policies

The system administrator defines policies that determine how files are physically stored on the multi-tier archive. The three storage tiers are illustrated below for LTO.



In all cases, files are first written to the RAID. Then storage policies determine how each file is subsequently treated. Policies include the following options:

- ❖ **RAID Only**  
Retain on tier 1 RAID permanently or until deleted and do not create any other instance of the file. This is just like writing to RAID on a standard server.
- ❖ **Keep on RAID and Mirror to Tier 2**  
After a file is written to RAID, write another instance to tier 2 storage whether that is LTO or optical disc. Retain instances on both tiers. This creates a copy on tier 2 for data protection.
- ❖ **Tier 2 Only**  
After a file is written to RAID, write another instance to tier 2 storage. Then immediately replace the file on RAID with a stub file representation which frees up RAID space. By reading the stub file, the file is restored directly from tier 2 storage.
- ❖ **Tier 2 with Timed Retention on RAID**  
After a file is written to RAID, write another instance to tier 2 storage. RAID retention rules based on time after written and time after last read, replace the file on RAID with a stub file representation which frees up RAID space. By reading the stub file, the file is restored directly from tier 2 storage.
- ❖ **Offline Only**  
This applies to LTO and ODA cartridges that have been physically exported from the library. There is a stub file representation in the file system and, if there is an attempt to read the stub file, the system will issue an on-screen notification and/or email alert that identifies which cartridge should be imported back into the library.

Groups of files can be given different policies and the groups are determined by folder location and file name. Policies can be tailored to meet the needs of specific folders. For example a group of files with the same policy may be all files written to a specific folder and its sub-folders. Policies can also be configured for specific file types. For example a policy can be set for all '.tmp' files which retains them only on RAID storage.

Storage policies apply automatically to all new files written to the system. It is also possible to change policies after files have been written to the archive. For example, files initially written only to RAID may be copied to tier 2 storage at a later date and then converted to stub files on the RAID simply by changing the policy.

## Functionality

Whether you select the LTO or Optical archive option, the functionality described below applies.

**Intelligent Storage Tier Management** – driven by policy. **Benefit:** Allows matching of storage tier to the required access; by defining a policy to write a tier 2 mirror, creates a continuous backup of content written to RAID.

**Single File System Interface** – The digital archive accepts all file types – from an MXF to a WORD document - and presents them in a single Windows file/folder structure. **Benefit:** works with most applications natively.

**Data Mover API** – In addition to the file system interface, an XML interface is provided. 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 third party applications to directly control and monitor the archive system. Applications that use this interface include NL Technology's Nearchive for archiving from Avid Interplay, CatDV from Squarebox Systems, Marquis Project Parking, axle Video MAM and MXF Server.

**RAID60** – the 6 TB or 10 TB disks are configured in two groups, each of which has RAID6 protection. Each RAID6 group provides a high level of redundancy allowing two disk failures. The two groups are striped for performance. **Benefit:** combines reliability and performance.

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

**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 security applications and media and entertainment.

**Partial File Restore** – Supports partial file restore from ODA and LTO. **Benefit:** allows rapid creation of video clips without need to restore whole file.

**Alert Module** – A software module is included which provides e-mail and on-screen alerts. These are tailored to the needs of system operators, system administrators and IT support personnel. **Benefit:** ideal for cartridge management and instant notification of any problems.

## Archiving to LTO

The DX-Series supports a wide range of LTO-7 libraries from leading manufacturers including Dell, HPE, IBM, Oracle, Overland, Quantum, Qualstar and Spectra Logic.

The LTO Archive Options (SKU 228061 and SKU 228062 for SAS and fibre channel libraries, respectively) include a permanent license to support an LTO library with up to 50 slots and 2 drives plus an unlimited number of offline cartridges. This license may be upgraded to support larger libraries.

The LTO archive options have the following functionality.

**Supported LTO Cartridge Types** – LTO-7 and earlier generations, back to LTO-3, are supported including rewritable and WORM cartridges.

**Supported LTO Formats** – LTFS and TAR. The administrator defines LTO cartridge groups and selects LTFS or TAR for each group. LTFS and TAR groups may be mixed on the same system. LTFS avoids proprietary formats and vendor lock-in. TAR allows use of unalterable WORM cartridges for legal compliance.

**LTO Cartridge Replication** – The system may be configured to automatically generate replica LTO cartridges. This is useful for creating duplicate cartridges that are exported from the library and held off site for data protection. It is a very cost effective way to provide strong data protection.

**Dynamically Expanding LTO Groups** – Blank LTO cartridges are automatically initialized and added to LTO cartridge groups. When cartridges become full, the system automatically jumps to the next cartridge. This approach means that the archive volume is not constrained by cartridge boundaries.

**Offline Cartridge Management** – The system manages an unlimited number of offline LTO cartridges.

**End to End Verification** – Data written to LTO is verified using CRC check-sums.

**Partial File Restore** – Partial file restore from LTO is supported.

**Migration to New Generations of Archival Storage** – The archive management software includes a utility called Repack that will migrate from today's LTO cartridges to a future generation, while keeping the files in the same logical location. Repack occurs as a background function while maintaining full access to all files.

**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. **Benefit:** useful file management tool.

## Archiving to Sony Optical

The DX-Series Optical Archive Option (SKU 228063) includes an interface card pre-installed in the DX server with two 8 Gb/s fibre channel ports. It supports the expandable Sony ODS-L30M library with Optical Disc Archive (ODA) drives. For libraries with one or two ODA drives, the internal library drives can be direct connected to these ports. For libraries with three or more ODA drives, these may be connected via a FC switch or additional interface cards may be installed to support direct connections.

The Optical Archive Option includes a permanent license to support an ODS-L30M library with up to 30 slots and 2 drives plus an unlimited number of offline cartridges. This may be upgraded to support larger libraries.

The optical archive option has the following functionality.

**Supported Optical Cartridge Types** – Sony 3.3 TB ODA2 cartridges and all lower capacities are supported including rewritable and WORM cartridges.

**Dynamically Expanding Cartridge Groups** – Blank ODA cartridges are automatically initialized and added to ODA cartridge groups. When cartridges become full, the system automatically jumps to the next cartridge. This approach means that the archive volume is not constrained by cartridge boundaries.

**Offline Cartridge Management** – The system manages an unlimited number of offline optical cartridges.

**Partial File Restore** – Partial file restore from ODA is supported.

**Migration to New Generations of Archival Storage** – The archive management software includes a utility called Repack that will migrate from today's ODA cartridges to a future generation, while keeping the files in the same logical location.

**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. **Benefit:** useful file management tool.

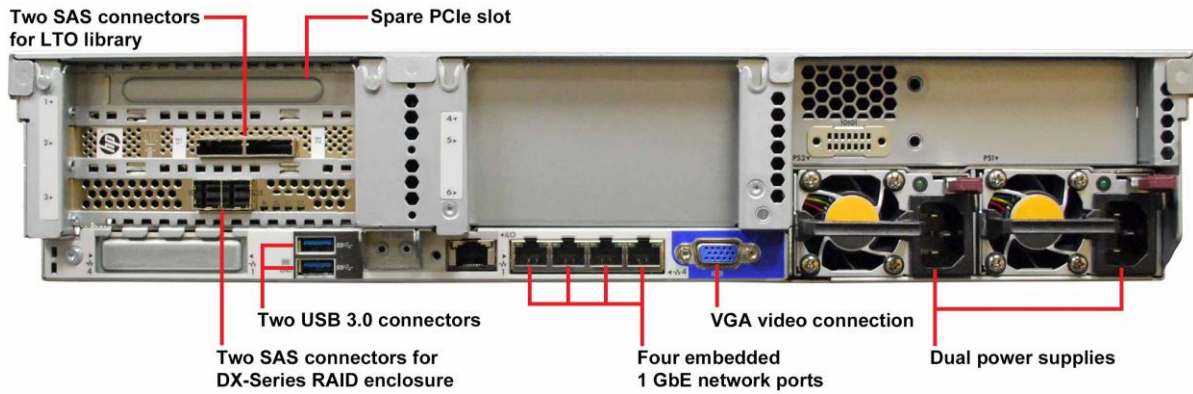
## Server & RAID Enclosure

The DX-Series systems have two main components: a 2RU server and a 4RU disk assembly as illustrated below.

### Front View of the Server



### Rear View of the Server (configuration with SAS Library interface)



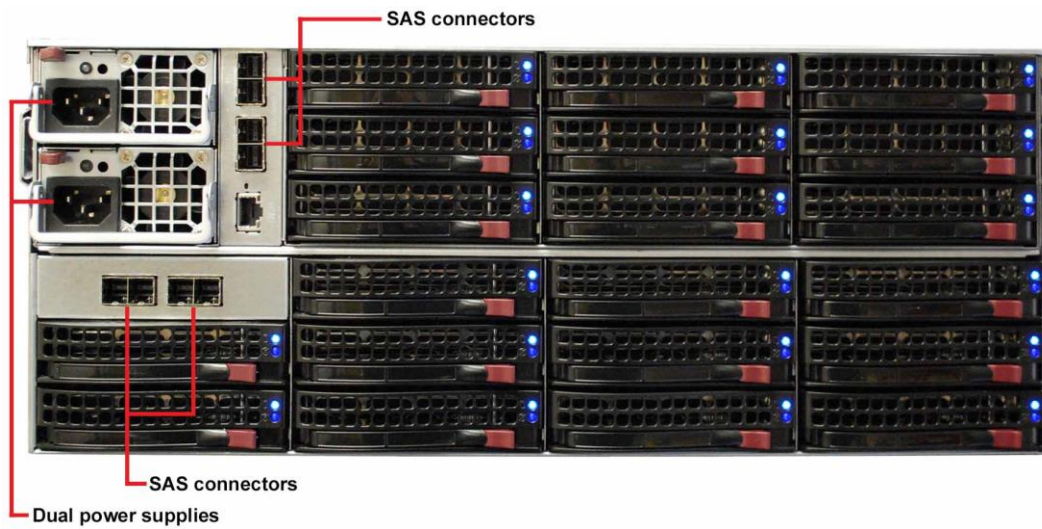
### Front View of the Disk Assembly

The front of the disk assembly has bays for 24 disks.



### Rear View of the Disk Assembly

The rear of the disk assembly has bays for 20 disks.



## Base Models

There are three different DX-Series base models with SKUs as shown below. The SKUs below include the base server and RAID. A DX-Series archive option may be added to manage LTO or optical storage.

XenData SKU	Disk Quantity & Capacity	Usable Tier 1, RAID Capacity
228064	24 x 6 TB	120 TB
228065	34 x 6 TB	180 TB
228066	44 x 6 TB	240 TB

Note that the usable RAID capacity is measured in TB where 1TB equals 10E12 Bytes.

## DX-Series Server – Base Model Configuration

Operating system:	Microsoft Windows Server 2012 R2 Standard Edition
Multi-Tier Storage Management Software:	XenData6 Server, XenData Alert Manager and Workflow API
Processor:	Intel® Xeon® 8-core processor
RAM:	64 GB
System disk:	2 x 480 GB SSDs mirrored
Network connections:	4 x RJ45 connectors; 1000BASE-T, 100-BASE-TX, 10BASE-T
Supported network protocols	CIFS/SMB and FTP
USB connections:	2 x USB 3.0 (rear mounted); 1 x USB 2.0 (front mounted)
Spare PCIe slots:	2
Number of power supplies:	2 redundant power supplies
Power:	100-240V; 50-60 Hz; 6.2-4.1 Amp max
Operation temperature and humidity:	50-95°F (10-35°C); 8-90% non-condensing
Form factor:	2U, 26.75" deep
Dimensions (HxWxD):	3.44" x 17.54" x 26.75" (87.3mm x 445.5mm x 680 mm)
Weight:	55 lbs (24.95 Kg)
Rack Rails:	Included

## DX-Series Server – Connectivity Upgrade Options

XenData SKU	Description
101049	Dual port 10 GbE network adapter HPE 530SFP+ pre-installed in server. This adds two 10 GbE ports and uses one PCIe slot. Optical transceivers (SKU 101081) not included.
101081	SFP+ 10 Gb/s LC Short Range Transceiver for insertion in SKU 101049. Quantity 2 required to use both ports in the adapter.
107130	Dual port 10 GbE network adapter for use with CAT6 or UTP cabling pre-installed in DX-Series server. It is an HP model 561T adapter and uses one PCIe slot.
101023	Fibre Channel adapter pre-installed in DX-Series server for FC SAN connectivity. Provides two 8 Gb/s FC ports with LC type connectors. Uses one PCIe slot.

## RAID Specification

Disk bays:	44 hot-swap (24 front and 20 rear)		
Disk capacity, type:	6 TB SAS 7,200 rpm		
RAID configuration:	RAID 60		
SKU (includes RAID & Base Server)	228051	228052	228053
Capacity (1TB=10E12 Bytes):	120 TB	180 TB	240 TB
Number of disks:	24	34	44
Connections to server:	External SFF-8644 Mini-SAS HD connectors		
Cooling:	7 hot-swap redundant cooling fans		
Number of power supplies:	2 redundant power supplies		
Power:	100-240V; 50-60 Hz; 6 – 12 Amp max		
Operation temperature and humidity:	41-95°F (5-35°C); 8-90% non-condensing		
Form factor:	4U, 27.5" deep		
Dimensions (HxWxD):	7" x 17.2" x 27.5" (178mm x 437mm x 699mm)		
Weight – 240 TB configuration	75 lbs (11.5 Kg)		
Rack Rails:	Included		

## DX-Series Server –Archive Options

XenData SKU	Description
228061	<b>LTO SAS Library Archive Option</b> Adds a PCIe interface card with 2 x external SFF-8644 Mini-SAS HD connectors to the server, leaving one spare PCIe slot. Includes a XenData license to manage an LTO library with up to two internal LTO drives and 50 slots. The license also supports an unlimited number of externalized cartridges. The license may be further upgraded to support larger libraries. This option does not include the LTO library which must be purchased separately.
228062	<b>LTO FC Library Archive Option</b> Adds a PCIe interface card with 2 x 8 Gb/s FC ports to the server, leaving one spare PCIe slot. Includes a XenData license to manage an LTO library with up to two internal LTO drives and 50 slots. The license also supports an unlimited number of externalized cartridges. The license may be further upgraded to support larger libraries. This option does not include the LTO library which must be purchased separately.
228063	<b>Optical Library Archive Option</b> Adds a PCIe interface card with 2 x 8 Gb/s FC ports to the server, leaving one spare PCIe slot. Includes a XenData license to manage a Sony ODS-L30M library with up to two internal optical drives and 30 slots. The license also supports an unlimited number of externalized cartridges. The license may be further upgraded to support larger libraries. This option does not include the Sony library which must be purchased separately.

## Contact Us

For further information, please contact XenData.

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