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Agenda



- DISC Archiving Systems
- ArXtor Series
- ArXtor Lite
- ArXtor Appliance
- ArXtor Series User Access & Diagnostics
- DISC SmartPack
- ArXtor Mobile App
- Summary



DISC Archiving Systems



- **Market Leader in Hybrid Archive Storage Systems**

DISC provides integrated, value-added solutions with a focus on protecting the long-term technology investments of clients by ensuring quality, reliability and value

- **Long history and Experience**

- Originally formed in 1952 as NSM Music Jukeboxes.
- **DISC** = **D**ocument **I**maging **S**ystems **C**orporation was founded, introducing its first optical storage library in 1990
- Merger with NSM in 2001, Merger with DAX Archiving Solutions in 2009
- Over 22.000 installations worldwide

- **Best-in-class German Engineering & Production**

- Long history and reputation for highest quality and reliability
- Investment in future-proof technologies

- **Headquarters in Haarlem, The Netherlands**

- Production in Bingen, Germany
- North America Sales office in Denver, Colorado, USA
- Worldwide network of resellers and support partners



Archive Storage Market & Strategies

- **Market Trends**

- Virtualisation and centralisation of IT - Cloud
 - Shared storage resources with data centres
- Remote faster connections
- Low Energy Consumption, Sustainable/Green solutions
- Larger and smaller capacities

- **DISC Roadmap**

- Libraries more intelligent
 - Integrating server into library
- Libraries more connectable
 - iSCSI, for remote and virtual environments
- Libraries more configurable
 - Rack mount scalable modules
- Libraries more reliable
 - Advanced serviceability and diagnostics



DISC ArXtor Series: Hybrid Storage Technology



Best of
Blu-ray

Best of
Disk



ArXtor1000 Appliance
front view

Blu-ray Disc Technology
Near-line/off-line WORM Archive Storage

Middleware 3rd Party Software
Library Management/ILM Applications

RAID Technology
On-line Storage/Storage Virtualization



ArXtor1000 Appliance
rear view

Long-term Archive Storage Solution based on HDD Cache with Blu-ray Optical Library

- ✓ Combine hard disk (speed) with durability of Blu-ray Archive Storage
- ✓ Intelligent Libraries & Network Attached Appliance Solutions
- ✓ Excluding 3rd Party Software for Library Management/Storage Virtualization



DISC ArXtor Series: Models



ArXtor lite

- Intelligent Blu-ray library with easy iSCSI connectivity to any (virtual) server environment.
- Ready to use system with native OS support for iSCSI. Requires 3rd party library management software.
- Upgradable to ArXtor Appliance.

ArXtor appliance

- Complete solution of customizable Blu-ray Appliance with embedded server and easy iSCSI connectivity
- Open system providing a virtual computing environment that can be configured custom-made. Requires 3rd party library management software.
- Optional hard disk storage expansion

** Appliance only*

DISC ArXtor Series - Capacity



System	ArXtor 7000	ArXtor 4000	ArXtor 1000
Capacity	51TB – 66TB	14.5TB – 37TB	1.5TB – 10.5TB
Slots	510 -660	145-370	15 – 105
Drives	2 - 10	2 - 6	1 – 2
HDD 2.5"*	Max. 8	Max. 8	Max. 8

** ArXtor Appliance only: Standard configurations include 5 or 8 hard disks (RAID 6 Configuration).
Other configurations available on request.*

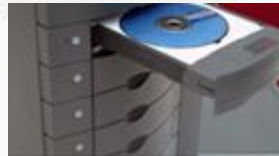
DISC ArXtor Series: Front/Rear View



* Appliance only



Front Panel Touch Display



Media Import/Export



Smart Pack



Mobile App

ArXtor Series: HW Details



Industrial PC Board

- Stable component with long term availability (8-10 years)
- 3 X GB Ethernet; 4 X SATA; 12 X USB;
- 2 different types used: Both Embedded Boards w/ 45nm Intel Core, 2 Quad & Intel Duo support up to T9400

iSCSI Connectivity

- Media changer
- Drives
- Native support by SQ, Qstar and Point
- Up to 3 GB/E ports support connectivity to library

Processors

- ArXtor Lite Series : Intel® T3100 Processor 575 (1M Cache, 2.00 GHz, 667 MHz FSB)
- ArXtor Appliance Series: Intel® Core™2 Duo Processor T9400 (6M Cache, 2.53 GHz, 1066 MHz FSB)

Drives

- BDXL (Pioneer)
- Direct attach via SATA to PC Motherboard
- Special GDA to provide enhanced diagnostics
- Various counters
- Drive temperature & voltage measurement



ArXtor Lite: Intelligent Blu-ray Library



ArXtor
lite

- ***"Adding local storage virtually"*** through easy iSCSI connectivity to any (virtual) server environment.
- iSCSI Library Connectivity for Drives & Media Changer
- Diagnostics through Touch Panel Display and Network Client
- Single-core CPU, 2GB RAM

ArXtor Lite Specifications

ArXtor
lite



	ArXtor 1000	ArXtor 4000	ArXtor 7000
Capacity (TB)	1.5 – 10.5	14.5 – 37	51 – 66
No. of Drives	1 – 2	2 - 6	2-10
No. Of Media Slots	15 – 105	145-370	15 – 105
SmartPacks	3-4	4	4
Avg. Media Exchange Times	2 seconds	4 seconds	6 seconds
Automation Connectivity	iSCSI		
Drive Connectivity	iSCSI		
Media Formats	BDXL-R, BD-ROM, BD-R, BD-RE, DVD, CD		
Media Capacity	Up to 100GB		
Media Characteristics	120 mm single sided hard coated surface		
Software Support	Support for Windows and Linux through 3rd party management software		

*Product design and specifications are subject to change without notice

**Library/Media Slots shown for 2 drives, for each additional pair of drives slot count is reduced by 30 slots



ArXtor Appliance: Blu-ray Appliance



- Complete solution of purpose-built Blu-ray Appliance with embedded server and easy iSCSI connectivity
- Virtual server environment capability (1-2 VM's) based on KVM Open-Source Hypervisor using Intel VT-x Technology
- Hot swappable redundant hard disk storage for Archive Cache (Dual internal cache hard drives , 2 X 500GB)
- Dual-Core CPU, 8GB RAM
- Up to 8TB HDD storage expansion optionally available



ArXtor Appliance Specifications



	ArXtor 1000	ArXtor 4000	ArXtor 7000
Capacity (TB)	1.5 – 10.5	14.5 – 37	51 – 66
No. of Drives	1 – 2	2 - 6	2-10
No. Of Media Slots	15 – 105	145-370	15 – 105
SmartPacks	3-4	4	4
Avg. Media Exchange Times	2 seconds	4 seconds	6 seconds
Automation/Drive Connectivity	iSCSI		
Media Formats	BDXL-R, BD-ROM, BD-R, BD-RE, DVD, CD		
Media Capacity	Up to 100GB		
Media Characteristics	120 mm single sided hard coated surface		
Virtual Machines	2		
Hard Disks	2 X 500GB		
Processor	Dual core T9400		
Memory	8GB		
Optional Storage Expansion	Hot swappable hard disks, Up to 8 X 2,5" 1 TB disk		
Hardware Raid controller	Included with storage expansion		
Software Support	Support for Windows and Linux through 3rd party mgt. software		

ArXtor
appliance

*Product design and specifications are subject to change without notice

**Library/Media Slots shown for 2 drives, for each additional pair of drives slot count is reduced by 30 slots

*** Standard configurations include 5 or 8 hard disks (RAID 6 Configuration) . Other configurations available on request

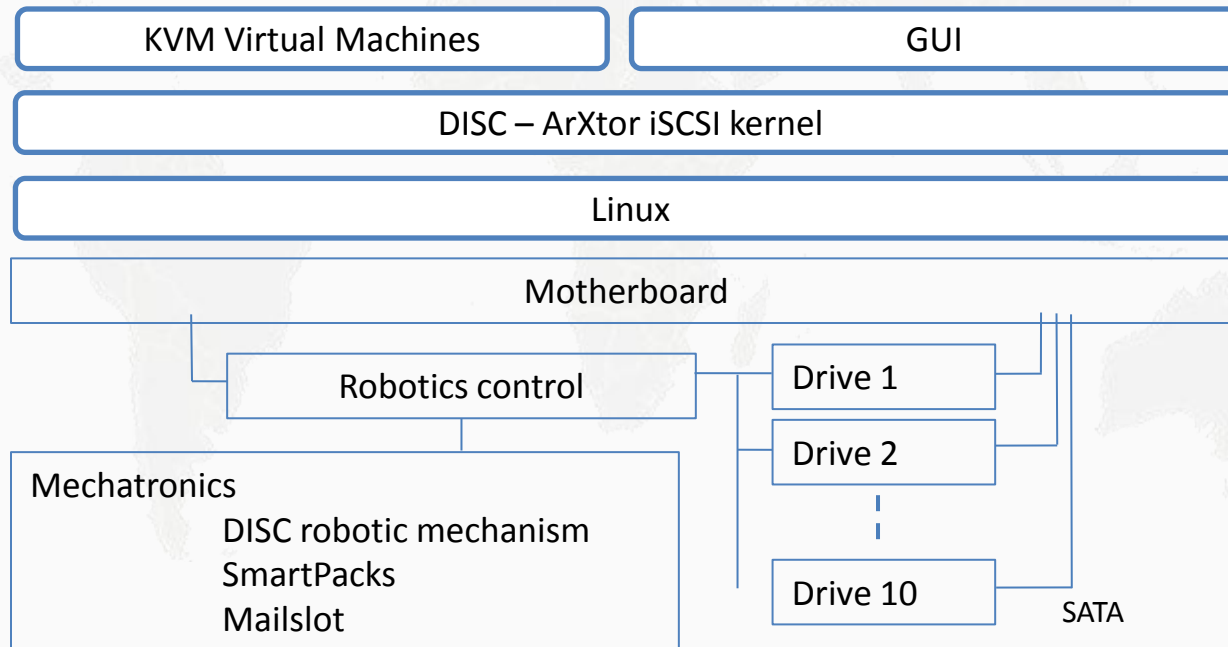


ArXtor Appliance: Virtual Machines

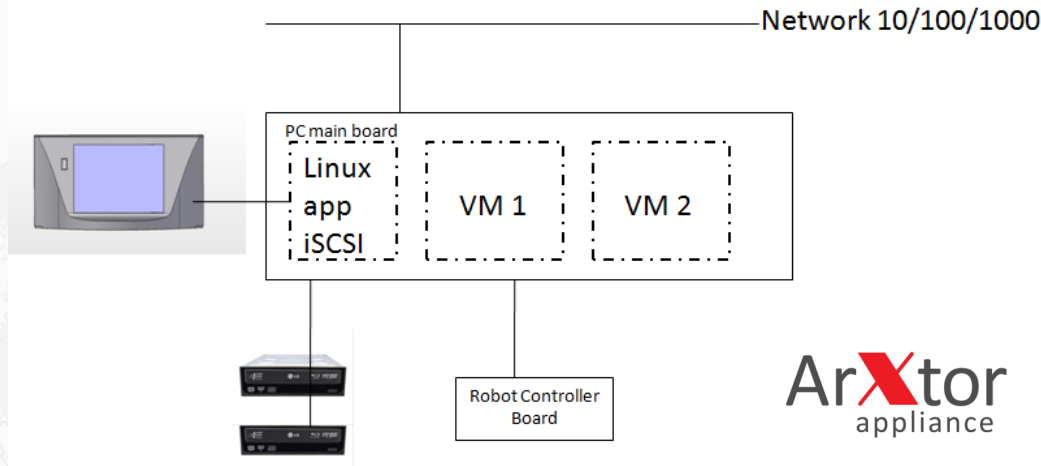


- Created by means of KVM virtualization software (open source, utilizing Intel VT-x technology).
- Provides virtual computing environment.
 - DISC/ArXtor iSCSI kernel = closed environment (not accessible)
 - Virtual Machines = open environment (completely accessible by user)

ArXtor
appliance

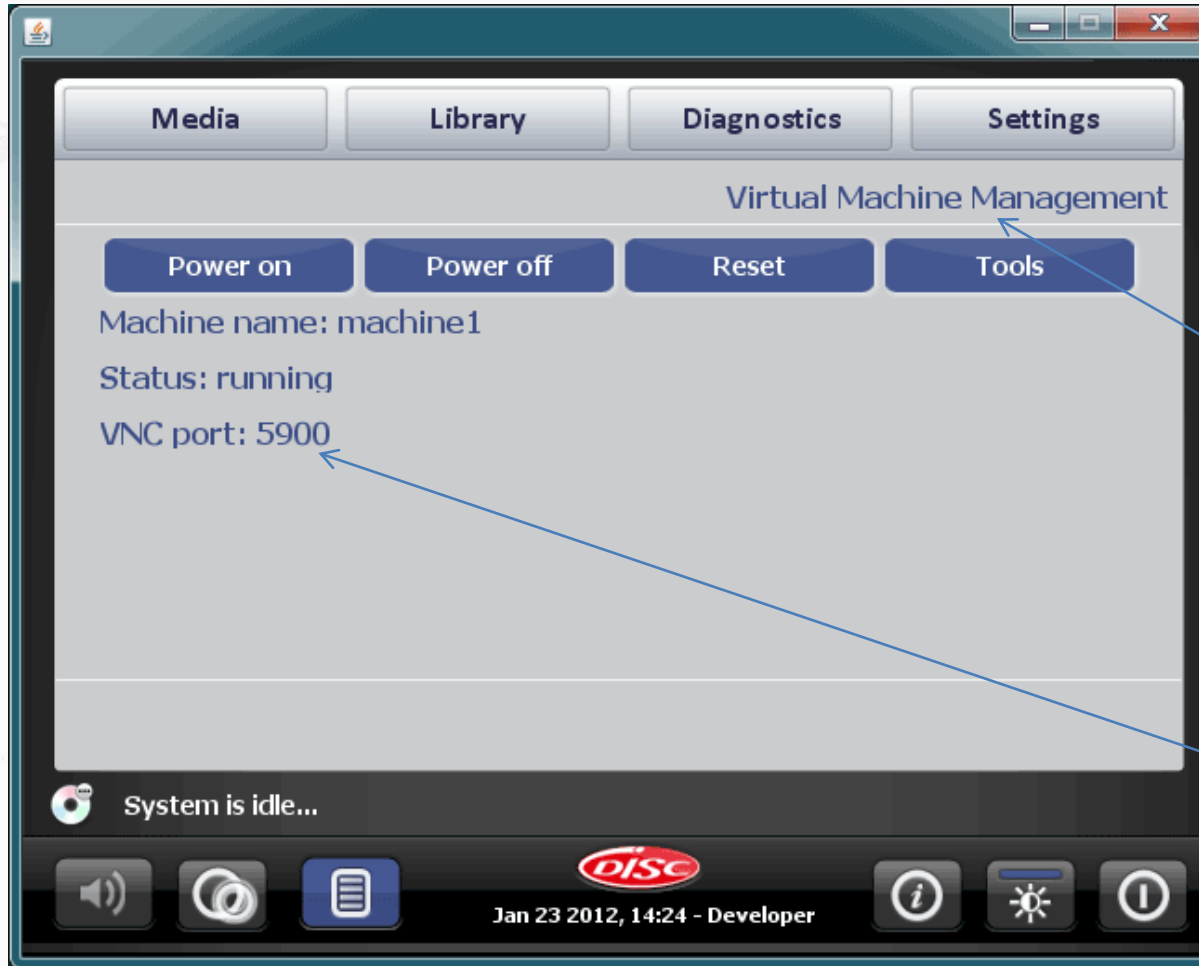


ArXtor Appliance: Virtual Machines



- User has full access to the virtual machine(s).
 - User can load any operating system, i.e. any Windows version, Linux, Solaris, etc. on the virtual machine(s).
 - On the operating system the user can load any application, e.g. 3rd party middleware for BD archiving.
 - Connects to the library with iSCSI.
 - Mounts the harddisk storage directly.
 - Connects to the console thru VNC or by means of display/keyboard/mouse of motherboard.

ArXtor Appliance: Virtual Machines



ArXtor
appliance

Goes to
dialogscreen to
upload/download
DVD and/or
harddisk images

Connect to
console of
virtual
machines by
means of
VNC

ArXtor Appliance Models 1/2

Basic Model without Storage Expansion

- 2 Hard Drives
- No Raid Controller/Software RAID
- Drives connected directly to MB
- Mirroring in Linux Kernel/
No Hot Swap

Drive Outline:

- 500GB Capacity (per drive)
- Type: Enterprise Class, 7200 rpm



ArXtor Appliance 1000 with Storage Expansion*

- 8 Hard Drives Rack
- Raid Controller + Zero Maintenance
cache protection unit (internal via PCI-x)
- Possible configurations 5 or 8 drives
- 2 Hard Drives of the basic Appliance
removed
- Hot Swappable Drives

Drive Outline:

- 1 TB Capacity (per drive)
- Type: Enterprise Class, 7200 rpm

Configurations:

- Default Raid6= One Hot Spare
- 5 Drives (Raid 6; Nett 3 TB)
- 8 Drives (Raid 6; Nett 6 TB)

DISC ArXtor Appliance Models 2/2

ArXtor Appliance 4000/7000 with Storage Expansion*

- 1 (or 2) X 8 Hard Drives Rack
- Raid Controller + Zero Maintenance cache protection unit (internal via PCI-x)
- 850 W power supply
- Possible configurations 5, 8 or 16 drives
- 2 Hard Drives of the basic Appliance removed
- Hot Swappable Drives

Drive Outline:

- 1 TB Capacity (per drive)
- Type: Enterprise Class, 7200 rpm

Configurations:

- Default Raid6= One Hot Spare
- 5 Drives (Raid 6; Nett 3 TB)
- 8 Drives (Raid 6; Nett 6 TB)
- 16 drives (future development)



*Notes:

- Upgrade Basic Appliance -> Storage Expansion only possible by means of on-site installation by DISC certified service engineer
- Upgrade 5 disc -> 8 disc configuration possible by means remote support
- Only configurations supplied by DISC are supported

DISC ArXtor Series GUI 1/5

ArXtor
series



Gui shows four main tabs.



Available Languages:

- English
- Spanish
- Russian

Status bar

Power off

Displays access level/certificate

Info

Backlight ctr

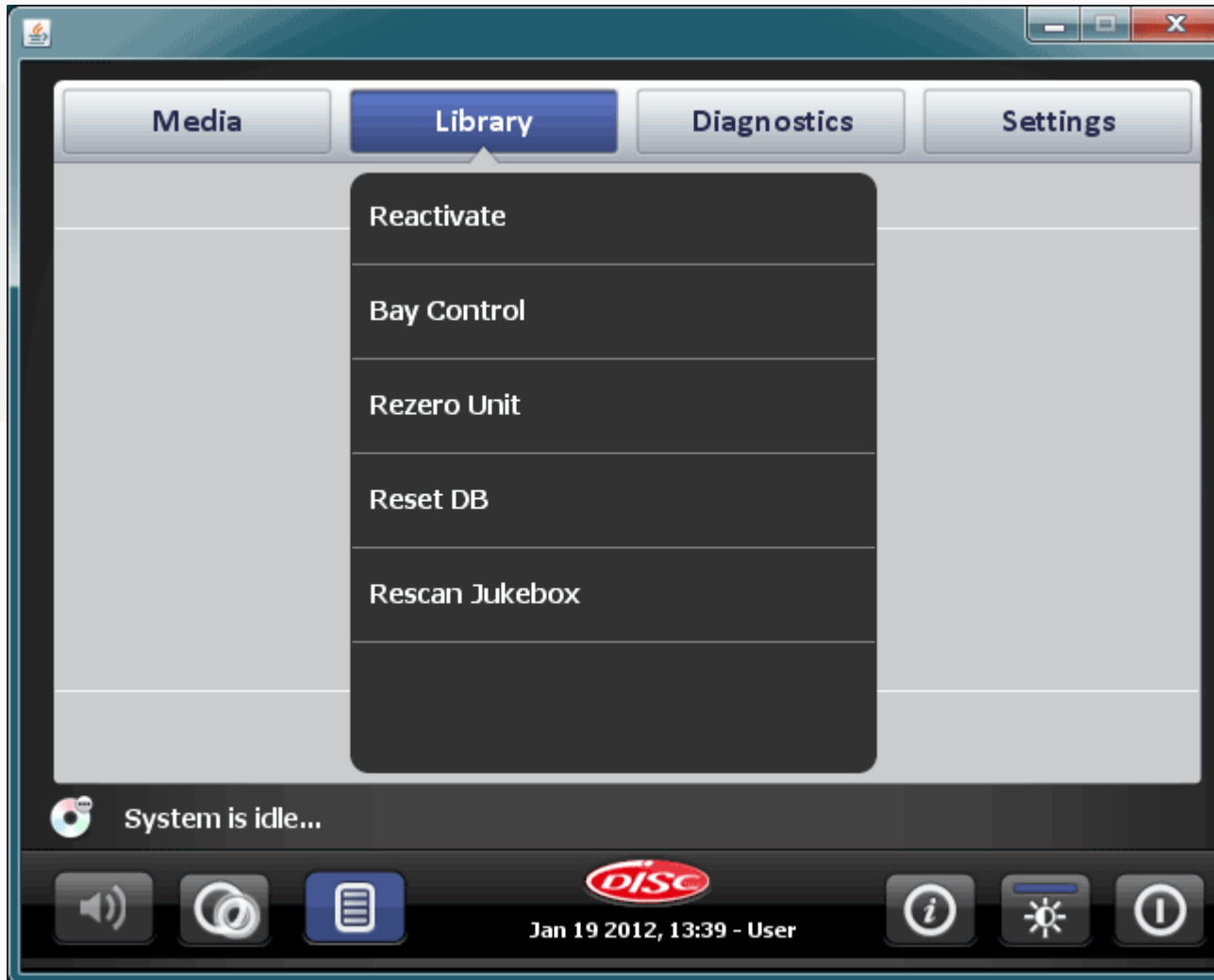
Jukebox summary

Virtual machines mgt

Alarm-off

DISC ArXtor Series GUI 2/5

ArXtor
series



DISC ArXtor Series GUI 3/5

ArXtor
series



- Extensive local & remote diagnostic capabilities and monitoring features.
- Powerful new patented DISC General Drive Adaptor (GDA) provides extensive BD drive and media statistics:
 - Temperature
 - Voltage
 - Counters
 - Moves per media
 - Media errors
 - Drive insertions
 - Drive ejects
 - Robotic picks
 - Mailbox import
 - Mailbox export
 - Reboots
 - .. And more..



DISC ArXtor Series GUI 4/5

ArXtor
series



DISC ArXtor Series GUI 5/5

ArXtor
series



Library Summary Screen:

One button -> immediate summary of library and media status

DISC ArXtor Mobile App

ArXtor
series



“Obtain information from the DISC ArXtor Libraries and/or Appliances remotely via any mobile device — anytime, anywhere.”

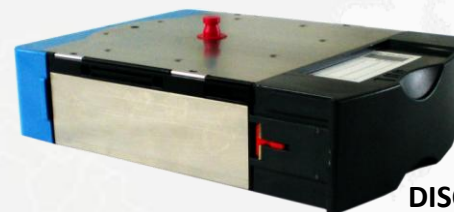


- Status display
- Remote management (mute alarms etc.)
- Retrieve information (logfiles, JB Summary reports)

*For iPad, iPhone or
Android Mobile Device*

DISC SmartPack™ Technology

The SmartPack™ Removable Media Technology offers simple and secure long-term archiving of optical media. Each SmartPack™ can hold 15 media and is inserted into one of four locations on the front of DISC libraries.



DISC SmartPack
(720 gr. 5.25")

Maximum Protection

- In and outside of the library
- Enclosed design to ensure protection against scratches, dust, fingerprints, shock and light
- Media locked into place

Easy Media Handling

- Inserted into one of four locations in the front of the library
- Uses same tray system as libraries
- Hot swappable exchange whilst the library is operating

On/Offline Data Mgt.

- Worldwide unique serial number & bar code stored on label and on smart memory chip
- Unlimited Offline Media Storage
- Light weight ergonomic design

Summary: Why DISC Library Automation?



Customer Requirements for Long-Term Storage vs. DISC Product Features

1. Long-term	With a 50+ Year Blu-ray Archive Grade media longevity and a future-proof modular architecture, there is no need for costly technology/data migrations.
2. Standard	A standard file system, a standard media format and non-proprietary HDD/Blu-ray technology allow seamless integration into any standard or GigE network.
3. Reliable	The enterprise class replaceable components and robust robotic maintenance free media picker facilitate steady and fast media movements.
4. Immutable	Blu-ray Media Technology offers intrinsic hardware level WORM Compliance and meets international regulatory compliance requirements.
5. Access	Transparent random access is facilitated by the use of standard network protocols, simple iSCSI connectivity access and Blu-ray Media Technology
6. Portability	Removable SmartPack Media technology and (Blu-ray) Universal Disc Format (UDF) provide maximum portability and infinite off-line media storage.
7. Green	Offering 66 TB in a 35U rack, the ArXtor Series consume less than 8 watts/TB capacity energy while off-line data management requires no power/cooling.
8. Service	Intelligent front-panel touch display, Web GUI and Mobile App facilitate intuitive and valuable local and remote (Java client) diagnostic capabilities and remote support.
9. Low TCO	Significant savings in technology refresh, data migrations, power, cooling etc.
10. Scalable	A range of frame sizes and capacities are available in 11U/23U/35U in rack-mount and free-standing pedestal configurations.



DISC Archiving Systems

Thank You



The Future of Archiving Today

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