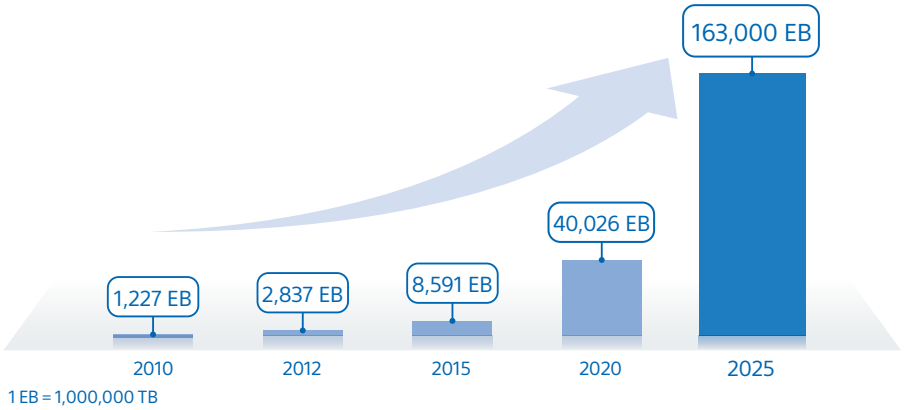
SONY

Optical Disc Archive

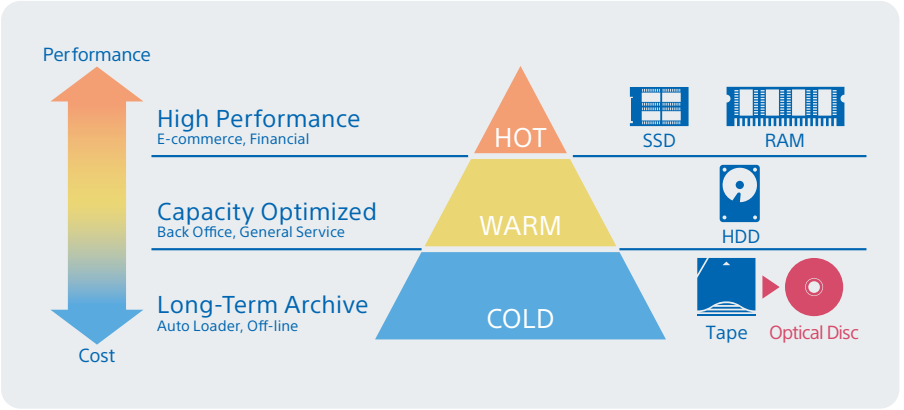
The new standard for data archiving

1 | Explosively increasing digital data

Organizations are faced with an ever-increasing data management challenge as they adopt new technologies and platforms to collect and extract value from data. Widespread use of social media, IoT, corporate and government data compliance, improved video production/ delivery, body cameras, advances in medical imaging, and legal hold requirements all contribute to the ongoing data explosion across many industries. These newly created assets need to be managed effectively, stored safely, and utilized along with legacy assets.



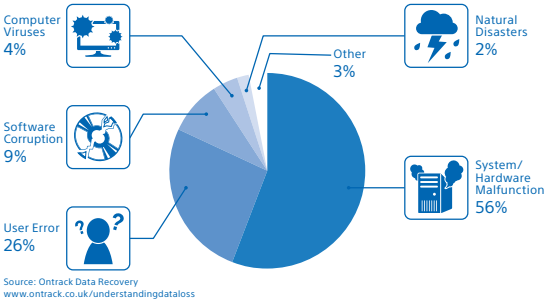
1 EB = 1,000,000 TB



Source: International Data Corporation (IDC)

2 | Why data management is important

Today, data can become lost or become inaccessible even with stringent data policies and controls in place, by accidental file deletion, storage or media failures, or worse: malware or ransomware that can alter or destroy data. In the event that any of these situations occur, productivity and or business continuity will be impacted. There are many factors to consider as you develop your strategy for data availability and preservation. Most companies adopt a tiered storage approach. Hot data resides on SSD and then tiered to a warm data tier like spinning disk. Snapshots, backups, even cloud solutions come into play. But what about the archiving of data to maintain regulatory compliance or meet other business requirements? Do the strategies above provide protection for archived data? The better question is, are they cost effective from a CapEx and OpEx standpoint?



The reality is businesses today spend too much on data that should be in an active or permanent archive rather than maintained in a primary storage tier. What organizations require is a cost-effective technology that minimizes data management and reduces primary costs. A solution that minimizes the necessity to migrate data at regular intervals and doesn't require constant validation to guard against bit rot. To address these requirements, Sony developed the Optical Disc Archive (ODA) portfolio. With ODA solutions, a customer's data is securely encoded onto non-magnetic immutable Archival Disc (AD) optical media that cannot be altered accidentally, maliciously, or through environmental conditions. Sony's AD is an environmentally stable optical medium with no data loss from bit rot and has an industry leading 10e24 bit error rate. Sony's ODA provides long term storage solutions with a low cost of ownership through the use of enterprise optical drives, that support generational compatability with long-life AD optical media.

Optical Disc Archive Generation 3

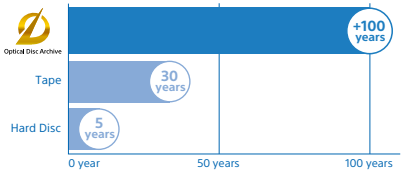
Introducing Sony's next generation of optical drives and media. Providing flexible solutions that scale from the desktop to the data center with increased storage capacity and performance, and supporting seamless read for all ODA generations of media and write capability for Generation 2 and 3 media.

Advantages

Long life

- Using new generation high-capacity optical disc "Archival Disc"
- Lifespan exceeds 100 years*

*Referring to the ISO/IEC 16963 method, this is the estimated average archival life of an archival disc calculated by internal acceleration testing

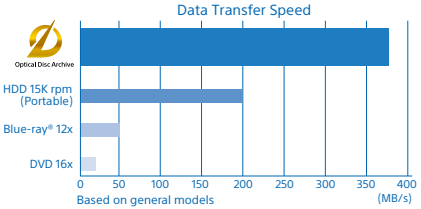


Robust media

- Non-contact read/write technology
- Durable and resilient in a wide range of environmental conditions
- Resistant to water damage
- Readable more than one million times

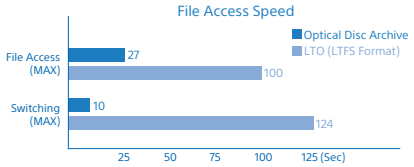
High speed

- Average read rate of 375MB/s
- World's first 8-channel optical drive unit
- "On-the-fly" verification for error-free recording



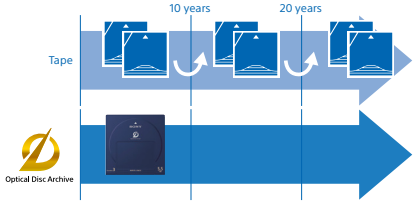
Accessibility & scalability

- Conforms to UDF (Universal Disc Format), an open vendor-neutral file system
- Random access media
- Easy to connect external USB 5.5TB drives to data center solutions that scale to 2.9 PB (per system)

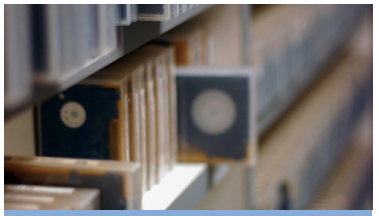


Low TCO

- Datacenter efficient solution requiring only 409 watts of power to manage 2.9 PB of data
- Generational drive and media compatability minimizes migration cost



Usage



Video archiving

Data center

Secure data management

Medical records

R&D data archiving

AI

- Storage of CAD data
- Security video storage
- Storage of official documents
- Big data storage
- Storage of uncompressed image data
- Storage of art and cultural assets

Archival Disc (AD) media and Optical Disc Archive (ODA) Cartridge

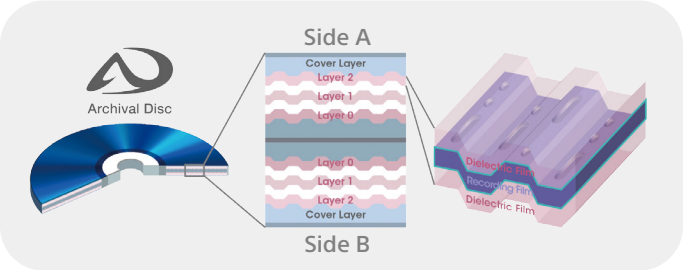
Reliable & durable, optimized for long-term archiving

Archival Disc (AD) media is a non-contact read/write technology that ensures availability for your archived data. AD media is extremely robust with a data life estimated at 100 years*, substantially longer than any other magnetically based storage media on the market. The ODA cartridge and AD media are designed to be highly durable and resilient in a wide range of environmental conditions. This enables air-gapped storage of the media in typical environments or off site facilities and does not require special climate controlled conditions.

*Referring to the ISO/IEC16963 method, this is the estimated average archival life of an archival bare disc calculated by internal acceleration testing.

Archival disc high capacity disc structure

Sony's Archival Disc media implements six discrete recording layers and data is recorded on both the land and groove. With the introduction of Generation 3 Archival Disc media, a new aerial density is achieved, delivering a jump in storage capacity to 500GB or 166% over Generation 2 Archival Disc media.



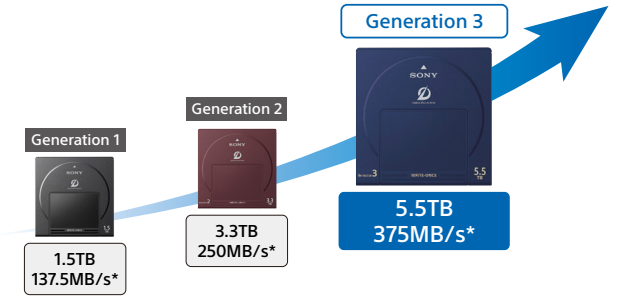
Mass Storage Cartridge with proven Optical Disc Technology

Each ODA cartridge (Generation 3) contains 11 discs that appear to the user as one volume of mass storage. The file format is UDF (Universal Disk Format). Each cartridge allows random access to the files and high-speed data retrieval.

Increased storage capacity for archival storage

To build upon ODA's low TCO, the Generation 3 drive is write compatible to Generation 2 cartridges and backward read compatible to all ODA cartridges.

*Read Speed



	Optical Disc Archive 3	Optical Disc Archive 2 *1	Optical Disc Archive 1 *1
Model Name	ODC5500R	ODC3300R	ODC1500R
Media type	Write Once	Write Once	Write Once
Capacity *2	5.5TB	3.3TB	1.5TB
Recording Time *3 MPEG HD422 50Mbps	150 Hours	100 Hours	48 Hours
Read Cycles *4	More than 1,000,000 times		
Operation Temperature	5°C to 55°C (41°F to 131°F)		
Storage Temperature/ Humidity	-10°C to +55°C (14°F to 131°F) / 3% to 90% RH (Short-term transportation condition) 10°C to 30°C (50°F to 86°F) / 30% to 70% RH (Long-term recommended)		
Estimated Archival Life *5	100 years		50 years

*1: Optical Disc Archive 1 and 2 were discontinued. (2021/3/31)
*2: Recording capacity depends on the usage environment. Actual recordable capacity may be less than indicated on the cartridge.
*3: The recording time is for reference only and based on a fully recorded disc at the specified data rate.
*4: Read cycles = Number of times for reading data in the disc.
*5: Referring to the ISO/IEC16963 method, this is the estimated average archival life of an archival bare disc calculated by internal acceleration testing.

More convenient efficient asset management

The media has built-in "Cartridge Memory". This provides seamless integration between the cartridge and the drive by storing basic content recording information.

Optical Disc Archive USB Drive Unit

ODS-D380U
Generation 3

Sony's stand-alone USB drive is the entry level desktop solution for a shelf-based archive that is ideal to protect all data types. You'll find ODA drives everywhere from small to medium-sized businesses to government offices at the local, state, and federal levels, and even in professional camera studios.

Windows, Macintosh, and Linux systems are supported by Sony's Optical Disc Archive Software for basic writing and reading of data to the USB drive. When paired with the included Optical Disc Archive Content Manager license, users can build a local database for future offline (shelf) searches. For users planning to expand in the future, Sony's File Manager2 (FM2) software provides interoperability from drive users to the scalable PetaSite automated library system.

Choose from Sony's Media Backbone media management solutions (NavigatorX, HIVE) or several ODA Partner software solutions for an expanded set of features and capabilities for your media and IT storage needs.

	Optical Disc Archive Generation 3	Optical Disc Archive Generation 2	Optical Disc Archive Generation 1
Product	ODS-D380U ODS-D380F *4	ODS-D280U ODS-D280F *4	ODS-D77UA ODS-D77F *4
Read	375MB/s (3Gbps) *1	250MB/s (2Gbps) *2	137.5MB/s (1.1Gbps) *3
Write (Verify on)	187.5MB/s (1.5Gbps) *1	125MB/s (1Gbps) *2	55MB/s (440Mbps) *3

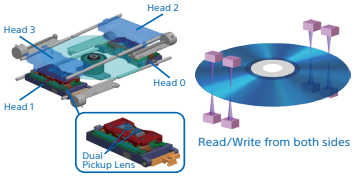
*Performance varies based on cartridge type. *Performance might be affected by the PC environment.
*Optical Disc Archive 1 and 2 were discontinued. (2021/3/31)
*1 Using the ODC5500R Cartridge. *2 Using the ODC3300R Cartridge. *3 Using the ODC1500R Cartridge.
*4 The Optical Disc Archive Generation 1 cannot use the ODC5500R or ODC3300R.
The Optical Disc Archive Generation 2 cannot use the ODC5500R.
The ODS-D280U/F can read data from Optical Disc Archive 1,2 cartridges but can only write data to the ODC3300R.
The ODS-D380U/F can read data from all cartridges and can write data to the ODC5500R and ODC3300R.

Main Features

- Long life: write-once (WORM) media
- 5.5 TB in a single data cartridge
- Virtually data migration-free system
- Fast random file access to data files
- Easy-to-connect USB drive
- Open Platform Architecture-Universal Disk Format (UDF)

8-channel Optical Drive Unit

Sony's original disc unit holds four laser assemblies, each containing two laser heads for a total of eight lasers per drive. With two assemblies positioned at the top and two at the bottom, the system can read or write both sides of the disc at the same time.



	Optical Disc Archive Generation 3
Product	ODS-D380U
Power requirements	19.5V DC (AC adaptor supplied)
Power consumption (peak)	105W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	4.8Kg
Dimensions (W, H, D) (excluding protrusion)	146 x 95.5 x 414.4 mm
Input / Output *2	USB3.2
Supplied ccessories	AC adapter x1 *1 USB3.2 Type C-C cable x1 USB3.2 Type A-C cable x1 Operation guide x1 Operation manual (CD-ROM) x1 Serial number sheet for Content Manager (License key) x1

*1 AC power code is not bundled.
*2 USB3.2: SuperSpeed USB 10 Gbps, USB3.0: SuperSpeed USB

Optical Disc Archive Software (Driver)

This software is available from the Sony Creative software home page.
For the most up-to-date information, please check the latest version of each help page, manual, and release note.

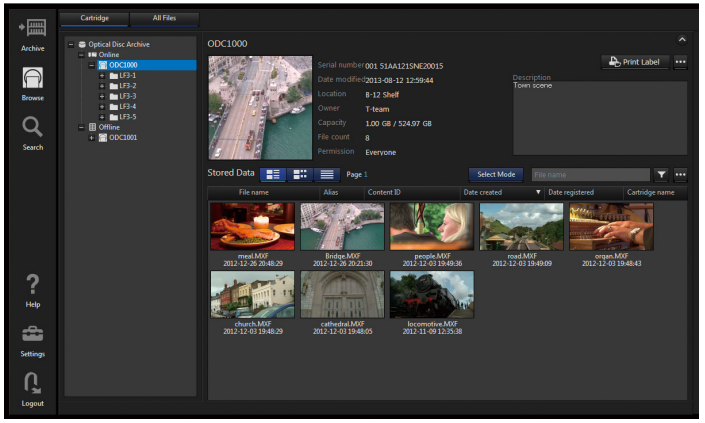
URL: http://www.sonycreativesoftware.com

Content Manager

A Content Manager software license is supplied with the drive for stand-alone usage.

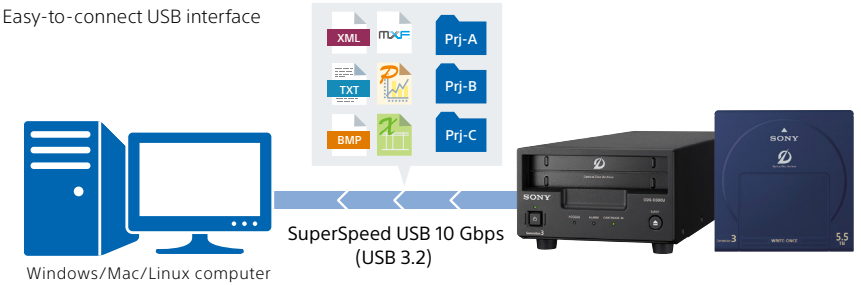
- Simple graphical user interface to manage files easily
- Supports troublesome tasks including creating metadata
- Printing labels to improve efficiency
- Automatically generates proxy and thumbnail generation
- Supports a variety of formats for creating metadata
- MD5 checksum for archive data
- Import/export metadata created in the cartridge unit

Please refer to the information on system requirements on the last page.



User Interface

System example



Operation Environment

Item	Generation 3 ODS-D380U
CPU	6th Generation Intel Core i5 2.3GHz or Intel Xeon 2.0GHz or more
Memory	4GB x (number of drive +1) or more
Free space on Disk *1	64GB + 64GB x (number of drive +1) or more
Interface	USB3.2/3.0
Supporting OS	Microsoft Windows 8.1 / 10 Pro 64-bit version Microsoft Windows Server 2012 / 2012 R2 / 2016 / 2019 macOS 10.13.6 / 10.14.6 / 10.15.7 / 11.1 Red Hat Enterprise Linux 7.4 / 7.5 / 7.6 / 7.7 / 7.8 / 8.2 64bit

USB3.2 : SuperSpeed USB 10 Gbps, USB3.0 : SuperSpeed USB
*1 Recommended storage is SSD. Even in optimal conditions, HDD transfer speeds are slow.

Optical Disc Archive
PetaSite Scalable Library

Optical Disc Archive

ODS-L30M Master Unit
ODS-L60E Extension Unit (Drive and Cartridge)
ODS-L100E Extension Unit (Cartridge only)
ODS-D380F Drive Unit

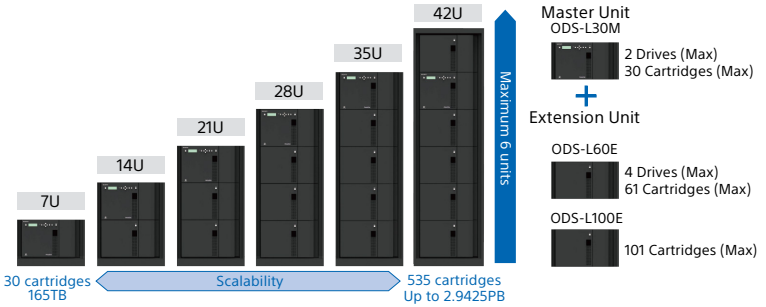
	ODS-L30M	ODS-L60E	ODS-L100E
Maximum number of drives	2	4	0
Maximum number of cartridges	30	61	101
Data capacity *1	Up to 165TB	Up to 335.5TB	Up to 555.5TB
Host interface	Fibre Channel 8Gbps		
Maintenance interface	Gigabit ethernet		
Power requirements	100V AC to 240V AC, 50Hz/60Hz		
Power consumption (max.) *2	409 W	472 W	–
Heat load (max.)	1,395 BTU/Hr	1,610 BTU/Hr	–
Operating temperature	5°C to 35°C (41°F to 95°F)		
Operating humidity	20% to 80% (relative humidity)		
Weight *3	31 Kg	25 Kg	23 Kg
Dimensions (W, H, D) (excluding protrusions)	445 x 308 x 940 mm (17 5/8 x 12 1/4 x 37 1/8 inches)		

*1 Recording capacity depends on the usage environment. Actual recordable capacity may be less than indicated on the cartridge.
*2 The wattage values for the ODS-L30M/L60E are measured with the maximum number of ODSD380F drive units. ODS-L30M without drives is 179 W. The ODSL60E without drives is 12 W. Each drive max power is 115 W.
*3 Includes the media, drives and rack rails. Excludes the rack.

A Modular Archive solution that scales from 165TB to 2.9 PB of immutable storage

The ODS-L30 forms the initial building block of the PetaSite modular library solution. It provides robotics for an entire rack with support for two drives and 30 cartridges. To increase archive performance and capacity, the ODS-L60E modular extension unit supports up to 4 additional drives and 60 cartridge slots. If additional archive capacity is all that is required, then the ODS-L100E can be added to provide an additional 101 slots of cartridge capacity. Both the ODS-L60E and ODS-L100E can be added within the same PetaSite library rack to provide the flexibility to support increased storage density or archive performance to meet your business requirements. Each module is 7RU and includes an Import/Export station that allows 3 cartridges to be loaded or unloaded from the library.

Flexible System Expansion



System Expansion Image

ODS-L30M Master Unit	ODS-L60E Drive/ Cartridge Extension Unit	ODS-L100E Cartridge Extension Unit	Maximum Number of Cartridges	Maximum Capacity (ODC5500R / 5.5TB)*1
1	0	5	535	2,942.5TB
	1	4	495	2,722.5TB
	2	3	455	2,502.5TB
	3	2	415	2,282.5TB
	4	1	375	2,062.5TB

*1 Capacity based on using ODS-D380F drives and ODC-5500R/BC media with barcode. The usable capacity may be less than the maximum capacity.

File Manager2

After File Manager software has been installed on a host computer, all operations can be controlled with a web-based GUI from each client computer.

- Simple graphical user interface (GUI) to manage files easily
- Automated failover of library control path
- Co-existence of automated library operation and offline shelf management
- High performance of end-to-end operation
- Interoperability between library and standalone drive
- MD5 checksum for archive data
- Import/export of metadata created in the cartridges unit
- Partial retrieve
- Modes for user application:
  - Web Service API mode (RESTful API)
  - File Server mode I/F (SMB)

Please refer to the information on system requirements on the last page.

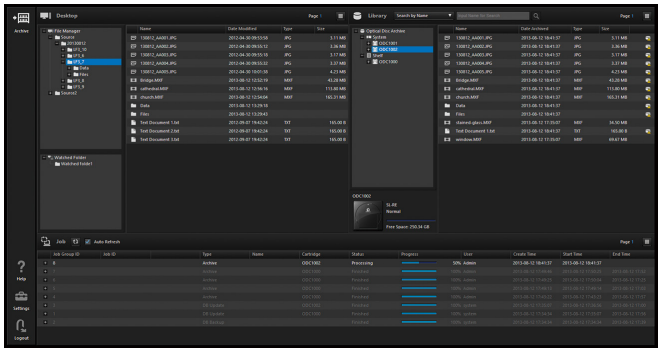
Ideal for Deep Data Archives

Sony's Optical Disc Archive system is ideal for deep data archives such as video archives, where a data tape may not provide sufficient security, for very long-term archiving. It can serve as second-copy (final) archives at remote sites and is ideal for business continuity/disaster recovery solutions.

Supported interface for user application

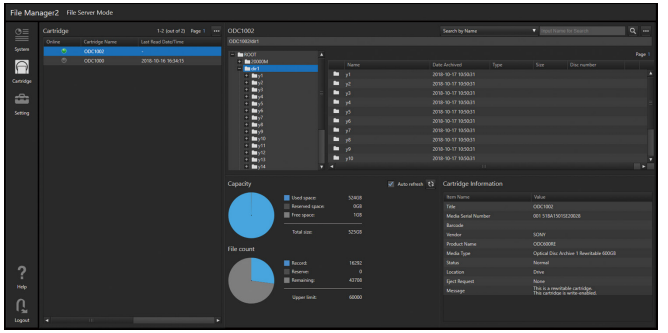
Web Service API mode: ODSZ-FM2

Realize data archiving, retrieving data easily with the simple graphical user interface. Ensure easy development of user applications with the Web Service API for Optical Disc Archive systems.



File Server mode: ODSZ-FM2 & ODSZ-FSL1

File Server mode is used for archiving/retrieving data to/from the Optical Disc Archive system through disk caches on the server, as in a NAS system (Windows standard I/F, SMB)*[1].



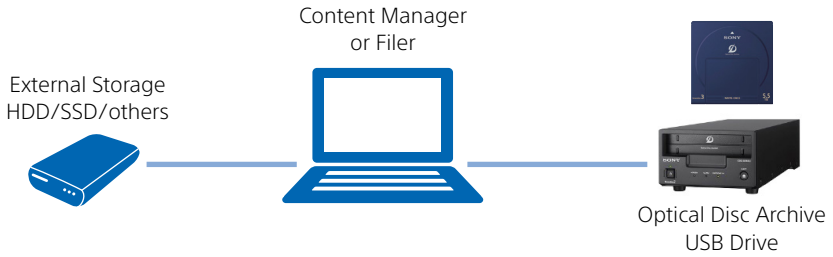
*1 For operability-confirmed application, please refer to the latest version release note of File Manager2.

Use Case

Optical Disc Archive solutions support many business use cases with scalability from the desktop to the datacenter for a wide range of industries. For example, departmental archives using the standalone USB drive to the PetaSite library for corporate wide archive projects that are deployed in the datacenter.

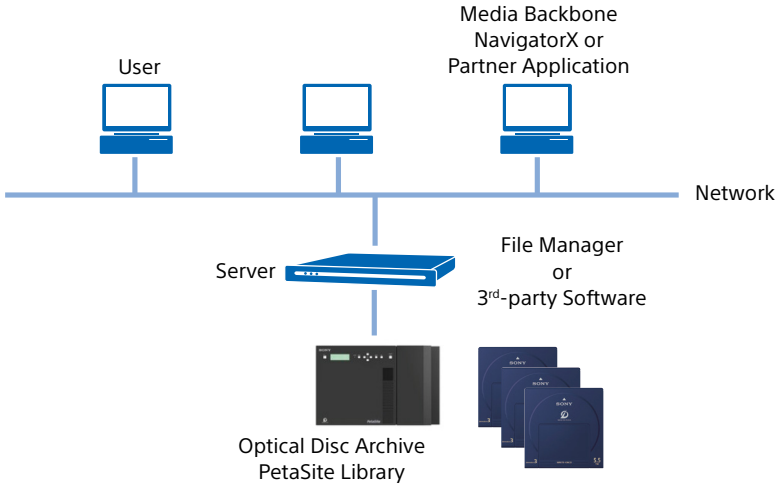
Archive/Backup with a stand-alone drive

Laptop-based compact archive



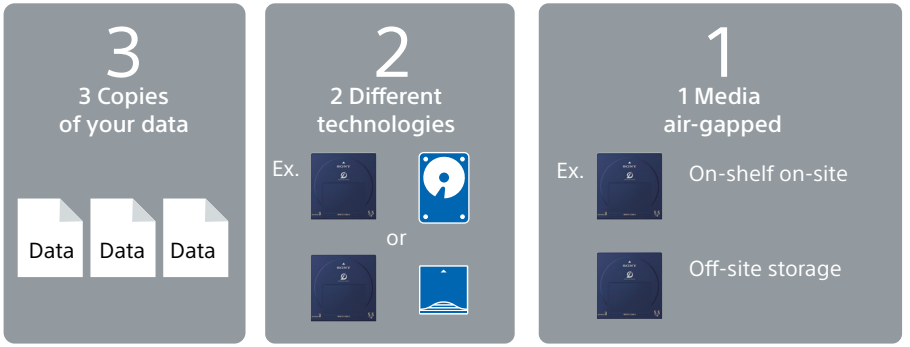
Archive/Backup with a library system

Scalable archive solution with PetaSite library



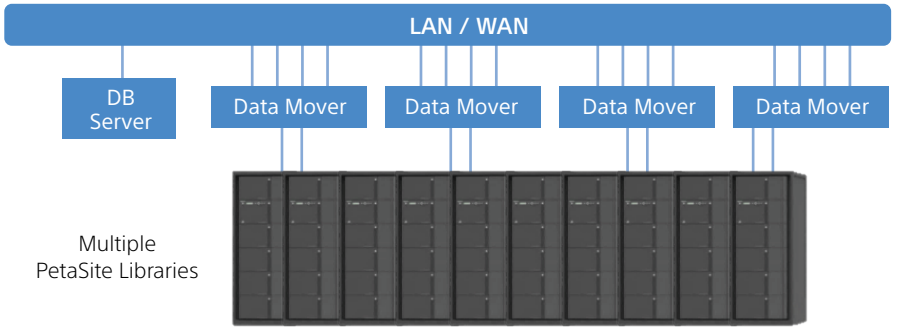
"3-2-1 Best Practice" as an archive industry standard

ODA solutions are a perfect fit to follow the industry standard best practice 3-2-1 strategy for secure, long term data protection.

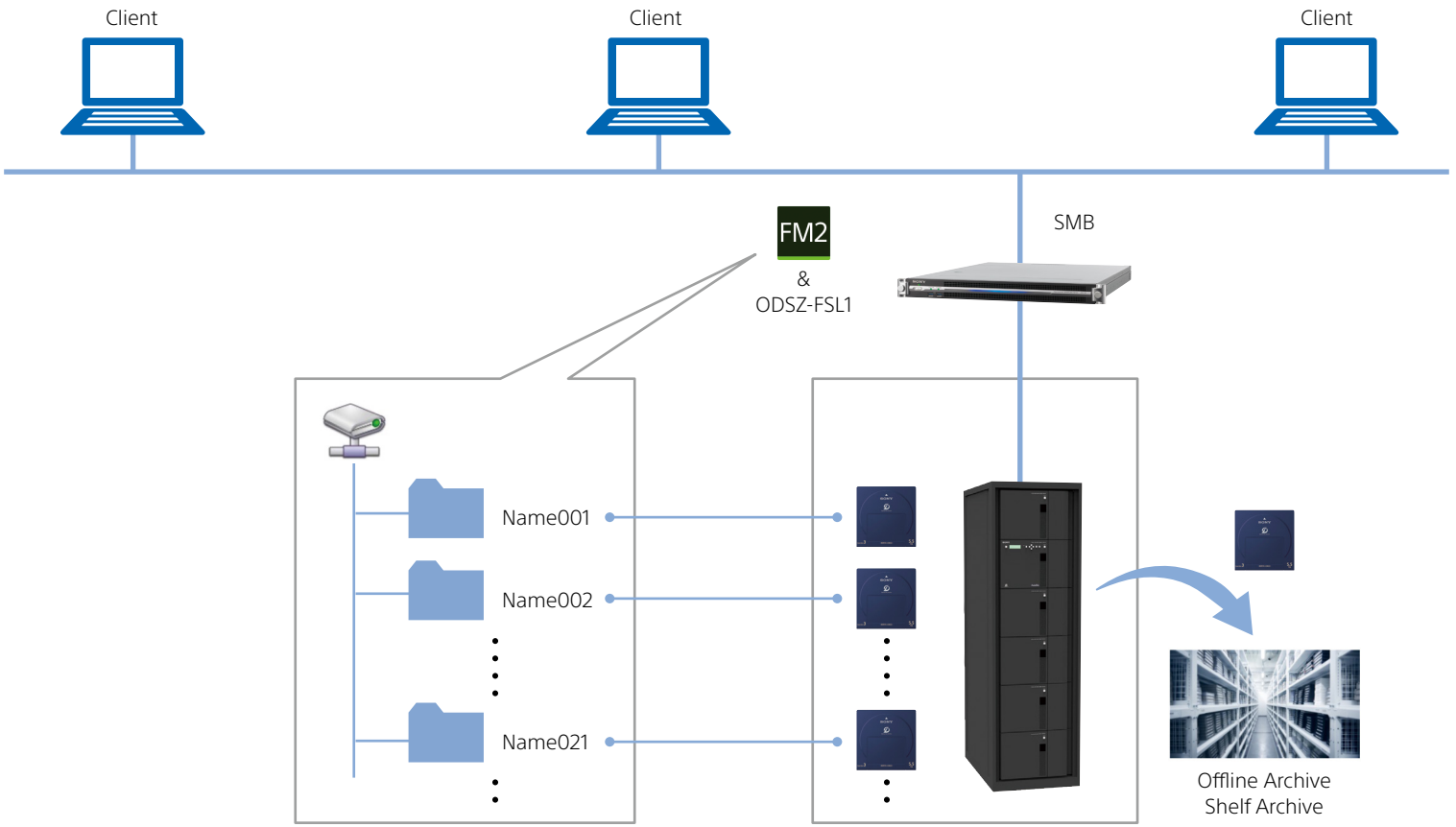


Data center solution

Scalable data center solution with multiple PetaSite libraries



File Server mode I/F



File Server mode is used for archiving/retrieving data to/from the Optical Disc Archive system through disk caches on the server, as in a NAS system (Windows standard I/F, SMB)*1.

*1 For operability-confirmed application, please refer to the latest version release note of File Manager2.

Optical Disc Archive Supporters

Total number of worldwide partner who made license agreement is over 150 (as of Feb/2021)

Optical Disc Archive Product

Stand-Alone Drive Unit

Optical Disc Archive 3 Drive Unit
ODS-D380U

Archive Software

Content Manager License Key
ODSZ-CTM1

File Manager2 License Key (FM2)
ODSZ-FM2

File Server mode License of FM2
ODSZ-FSL1

Optical Disc Archive Cartridge

Optical Disc Archive Cartridget
ODC5500R

PetaSite Scalable Library

Master Unit
ODS-L30M

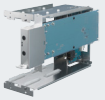
Extension Unit (Drive and Cartridge)
ODS-L60E

Extension Unit (Cartridge Only)
ODS-L100E

Optical Disc Archive 3 Drive Unit
ODS-D380F

Extension Kit for ODS-L30M
ODBK-103

Power Supply for ODS-L30M / ODS-L60E
ODBK-201



Power Supply Base Unit for ODS-L30M
ODBK-202

Power Supply Base Unit for ODS-L60E
ODBK-203

* To use File Server mode, purchase ODSZ-FS2 & ODSZ-FSL1.
* Software is available in Sony Creative Software homepage.
URL:http://www.sonycreativesoftware.com

System Requirement

This software is available from the Sony Creative software home page.
For the most up-to-date information, please check the latest version of each help page, manual, and release note.
URL:http://www.sonycreativesoftware.com

Content Manager

	System Requirement
CPU	Intel Core i5 3 GHz or higher
Memory	8 GB or more
Storage available capacity	• 500 MB or more HDD free space is required for installation. • About 300 GB of HDD free space is required to archive 1,000 hours of data (the required free space depends on the number and format of files to manage). • When extracting metadata from files on a cartridge, a hard disk drive with free space greater than the total size of the files from which metadata is being extracted is required. Therefore, the maximum free space required is equivalent to the capacity of the cartridge.
OS	Microsoft Windows 8.1 /10 Pro or later, 64-bit version macOS 10.12 / 10.13 / 10.14 / 10.15 / 11.0
Web browser	Windows Microsoft Internet Explorer 11, Microsoft Edge, or Google Chrome macOS Safari 10/11/12/13/14 or Google Chrome
Other	Driver : Please download "Optical Disc Archive Software" from the following site and use the latest version. Update the drive firmware to the latest version as well. URL:http://www.sonycreativesoftware.com

File Manager2

Control PC	File Manage mode	File Server mode
CPU	Intel Core i5 3GHz or higher	
Memory	8 GB	16 GB
SSD/HDD available capacity	200 GB + α*1	File Manager mode + 200 GB
OS	ODS-L10 or SB drive unit connection : Windows 10 64-bit ODS-L30M connection : Windows Server 2012 / 2012 R2 / 2016 / 2019	Windows Server 2012 / 2012 R2 / 2016 / 2019
Interface	• ODS-L10 connection (File Manager mode only): Ethernet × 2 ports (for PC client connection and ODS-L10 connection), USB ports (one for each drive) • ODS-L30M connection: Ethernet × 1 port (for PC client connection and ODS-L30M connection), Fibre Channel HBA (Host Bus Adapter) • Drive unit direct connection: Ethernet × 1 port (for PC client connection), USB ports (one for each drive)	

*1 Additional capacity α = Maximum cartridge capacity × Number of drives (Ex. Optical Disc Archive Generation 3 cartridge and 1drive case : 5.5TB x 1drive = 5.5TB)

	Client PC
Hardware	Hardware supporting the following OS and web browser without problem.
OS	Windows 7 / 8.1 / 10, macOS 10.13, 10.14, 10.15
Web browser	Microsoft Internet Explorer 11, Microsoft Edge, Google Chrome, Safari 11/12/13

Network Precautions

This application could be accessed by any unintended third party on the network, depending on a usage environment.
Please connect to a secure network.

Distributed by

MK11054V7OHB21MAR