

ObjectMatrix

Solution Brief

Object Matrix with Adobe Creative Cloud Video Apps

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Overview

MatrixStore, from Object Matrix, is a Digital Content Governance (DCG) and object storage platform that has been fine-tuned to enable global collaboration and meet the challenges faced by organisations ingesting, protecting, curating, processing, sharing and distributing Adobe® Premiere® Pro video content. MatrixStore is more than just a filesystem. It is the flexible and integrated private storage cloud that fits seamlessly into various media focused workflows. Whether ingesting, transforming, parking or archiving content, MatrixStore uses object-based technology to provide a connected, automated platform that supports a wide range of production workflows with the Adobe Creative Cloud® apps and services.

Adobe Premiere® Pro CC, a professional video editing application, serves as the hub for Adobe video tools, like Adobe After Effects CC, Team Projects collaboration features, and integrated services, such as Adobe Stock. Adobe Premiere Pro and MatrixStore are tightly integrated with solutions from many of the same technologies partners providing seamless and automated workflows from media asset management to project sharing and QC.

MatrixStore can be deployed as a private cloud platform that protects data and metadata, both on-premise and off-site, whilst automatically applying policies to ensure a secure and scalable solution for your data storage requirements.

What matters most to Object Matrix customers?

■ Integration

Our customers require a non-disruptive experience when implementing tactical or strategic platforms. Object Matrix works with a variety of industry partners to ensure the seamless implementation of desired workflows. We have a number of MAM partners who have integrated with our object storage APIs and file system interfaces to ensure data and metadata is archived in automated workflows.

■ Collaboration

The ability to share content with internal or external teams is paramount for all of our customers. Either using 3rd party MAM applications or Vision from Object Matrix collaboration is a fundamental requirement for post, broadcast and OTT providers alike.

■ Speed and Efficiency

Integration brings automation and thus the MatrixStore Digital Content Governance platform carries with it the benefits of operational efficiency and new opportunities to generate revenue streams.

The speed of access to data is key to generating new content or reusing legacy content. Private cloud storage ensures all archived content is available to generate income or new content for the community.



We were looking for a powerful solution, that would be future proof in terms of accessing content, could scale in line with our business needs, with good processing power, that is simple to deploy, and which we could use autonomously. With more than 30,000 assets to manage, security was also at the heart of our decision.

Eric Grapinet, Technical Director, OPTV

When we first selected Object Matrix as a storage partner in 2014, over cheap NAS and SAN solutions, we did so knowing that MatrixStore could grow both in scale and function. It was always the plan to implement a business continuity strategy as the content we generate daily and the archive we were digitizing is of great importance to our global community.

Director of Productions, MTA International.



Benefits of working with Object Matrix

Editorial

- Integrated and intuitive interfaces. Editors want solutions that work with the tools they use.
- All assets in the archive available at their fingertips.
- Easy to find and browse clips, audio, images or scripts.
- Sharing content with colleagues and clients is a breeze.
- Enforces good metadata entry so finding content later is much easier.

Technical

- Future proof in scale, performance and workflow.
- On-premises or off-site private cloud technology that is non-disruptive, proven, integrated and includes automated Business Continuity and Disaster Recovery workflows.
- Removes the headache of many silos of storage and solves issues of teams using USB drives or cheap NAS/SAN to protect incoming content.
- Tackles data security challenges, apply retention policies and audits access to storage. Reduces chances of accidental or malicious deletion.

Commercial

- Brings increased efficiencies and ROI is driven by generating new revenue streams from latent content currently sat on offline media.
- Ensures revenue generating activities continue despite local outages.

Product Highlights

- Trusted Object Storage that scales to petabytes and beyond whilst increasing performance and processing capacities.
- Automates storage management tasks to ensure data longevity and availability
- Built-in Disaster Recovery & Business Continuity enables organisations to access content.
- Unique Process in Place (PiP) functionality processes the data where it lives, automatically extracting and indexing Adobe XMP metadata, making it searchable with any Object Matrix interface.
- Implement business rules controlling content retention, HSM, regulation compliance etc. All actions fully audited.
- Filesystem (SMB, NFS, CIFS, local volumes), FTP, Amazon S3 and MatrixStore API access.
- Forward and backward hardware compatibility for Future Proof expansion of the storage.
- Thoroughly tested and proven with a range of workflow partners including Adobe, Glookast, Telestream, Cantemo, Vidispine, Archiware, Vidcheck, Interra Systems etc.
- Advanced metadata management, extraction and indexing.
- Metadata tagging and search support for workflows not endorsed by a MAM, DAM or PAM.
- “Vault” technology allows storage to be partitioned for different workflows, departments or external customers.
- Data Integrity checks using “checksums” such as MD5 or Adler32 to ensure authenticity on ingest.
- SNMP support, LDAP & Active Directory integration.

As well as providing a highly secure and audited private cloud platform, Object Matrix also offers intuitive applications for protecting content, managing metadata and browsing/sharing content with internal or external teams:

Vision is an easy to use browser-based content search and collaboration tool. The interface allows searches to be done on MatrixStore, upload or download data and is also able to perform additional asset management functionality. Vision allows access to the entire digital archive from a web browser interface and can play back low and high-resolution video on demand. This also means that Vision makes it easy to search, locate, browser and share content; your content is a simple keyword search away!

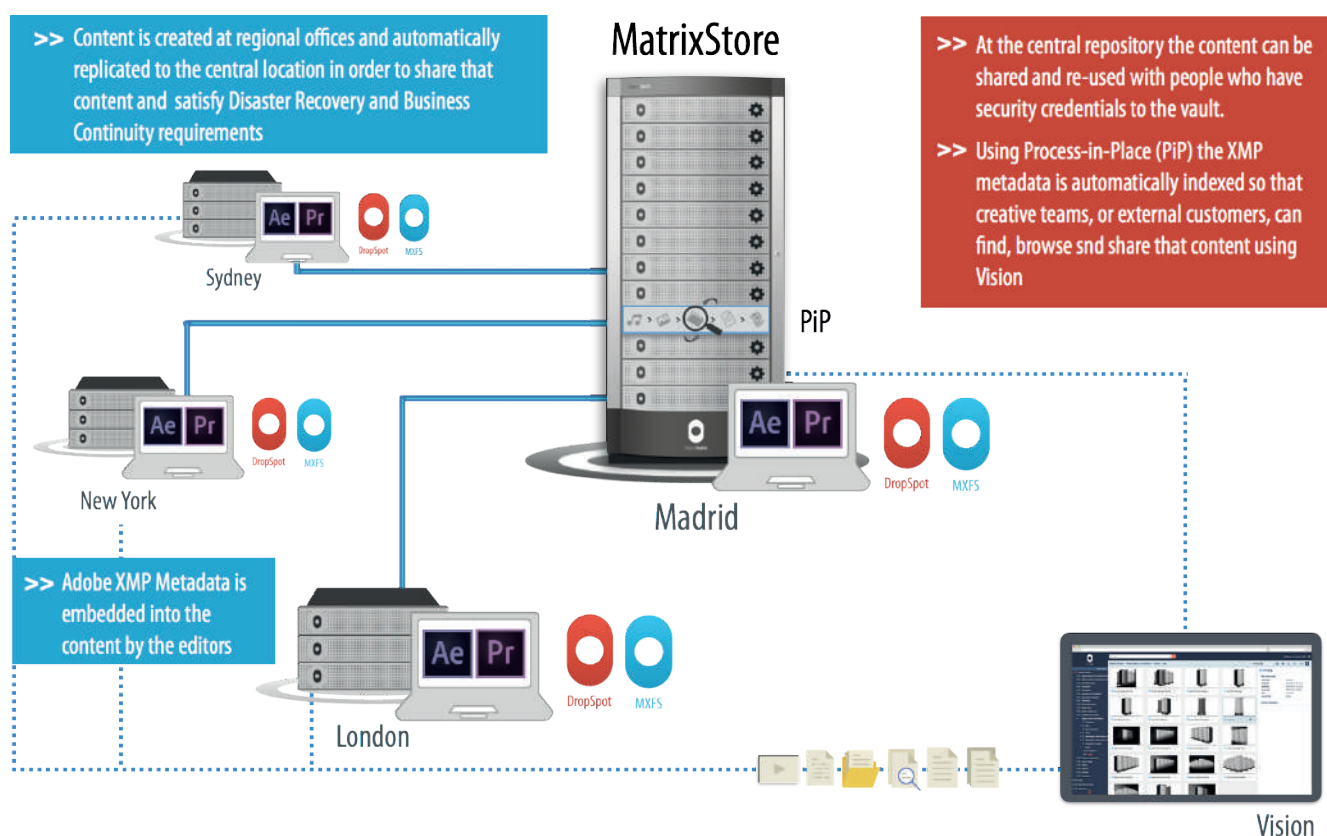
MXFS application is able to incorporate MatrixStore into existing workflows with the minimum of effort. It allows direct access to content, enables content to be shared across platforms, browser clips directly and also enables user-driven workflows. MXFS can run from Mac, Windows or even Linux Clients and has a local mount point, which represents a massive storage pool.

DropSpot is a simple but powerful, secure asset management application that uses the MatrixStore API to copy data between storage platforms and MatrixStore archive quickly. DropSpot is entirely free to use on any number of client machines and provides customisable forms to encourage best metadata entry practices and enhanced search capabilities.

Workflow Example: Global Content Creation and Collaboration using MatrixStore and Adobe CC Apps

Our customers use a variety of applications from Object Matrix, Adobe, and third parties to create, curate and share content. Below is a description of a typical workflow, as shown in the diagram:

- ▶ Content is ingested to the MatrixStore DCG platform at the remote locations.
 - Via cards, disks or file transfer (Aspera, Signiant, FileCatalyst, Cantemo, Vantage, Axle etc.) using DropSpot, MXFS, SMB, S3 or FTP.
- ▶ The content can be browsed directly using Adobe Premiere Pro CC using MXFS mounted on their workstation.
- ▶ Using DropSpot, MXFS or SMB, the content can then be moved to production storage for the editing process.
- ▶ Editors work in the Adobe Creative Cloud applications collaborate on projects together, adding XMP metadata.
- ▶ Projects and work in progress (WIP) are backed up or parked using MatrixStore in nearline workflows.
- ▶ Finished content is moved to an archive vault.
- ▶ The archive vault is configured to replicate to the central location over the WAN.
- ▶ When the content lands in the central location, the vault is configured to extract the Adobe XMP metadata, at which point it is indexed for search.
- ▶ Users with the appropriate security credentials, at all locations, can use Vision from Object Matrix, to search, browse and share content.
 - Users can be internal teams.
 - External customers.
- ▶ LDAP & Active Directory integration.



Configuration, Trouble-Shooting, Support and Training

Configuration

MatrixStore will come pre-configured with network addresses and full cluster configuration. An Object Matrix engineer will assist with the initial installation of the MatrixStore cluster and full training of key members of staff will also be given.

The MatrixStore intuitive Admin tool allows the creation of vaults and users, including via LDAP or Active Directory.

What is a vault? - MatrixStore is a multi-tenancy platform. Any object stored in MatrixStore is stored into a logical entity called a vault. A vault is like a “partition” or workspace that can be assigned its own users and even have its own administrator. Users on a vault can have their own access rules, i.e., read, write, delete and search. As many vaults as required can be created in a single cluster. Vaults can be assigned Per project, Per department, Per data type or Per customer.

When a vault is created, it can be given a set of properties dependent on the data to be stored within it. Security between vaults is stringent, therefore, using credentials from one vault user will never allow you to read/write/etc to another vault. Different vaults can be mounted as various file-systems (i.e. Drive Letters in Windows, or volumes in Mac or Linux) or using a different MatrixStore application in that connecting to a vault using Vision will see the same data as connecting to a vault using DropSpot.

What is Process-In-Place (PIP)? - Process in Place is a content-aware feature developed by Object Matrix that reduces the processing needed to index and access content. Traditional approaches require either manual intervention or for content to be moved around internal or external networks. These additional steps can often be broken or inefficient. A MatrixStore object storage cluster allows PiP to take place and therefore removes this need, as it provides a self-managing digital preservation platform that allows the content to be processed where it lives. PiP ensures that content providers can easily find the specific piece of content at any given time. EXIF, Media, XMP, AS10 and AS11 metadata currently supported. More are on the roadmap and available on request.

Options for Ingest - Preserve original raw files on MatrixStore - Ingest directly to MatrixStore using DropSpot’s bespoke metadata forms to sort and tag assets. Then simply set Adobe Media Encoder CC to watch the vault, transcode assets and put the results in another vault.

Convert during Ingest - Ingest using Adobe Media Encoder and make the destination a MatrixStore vault. XMP Metadata added by the Adobe applications is automatically extracted by PIP and made searchable with Vision.

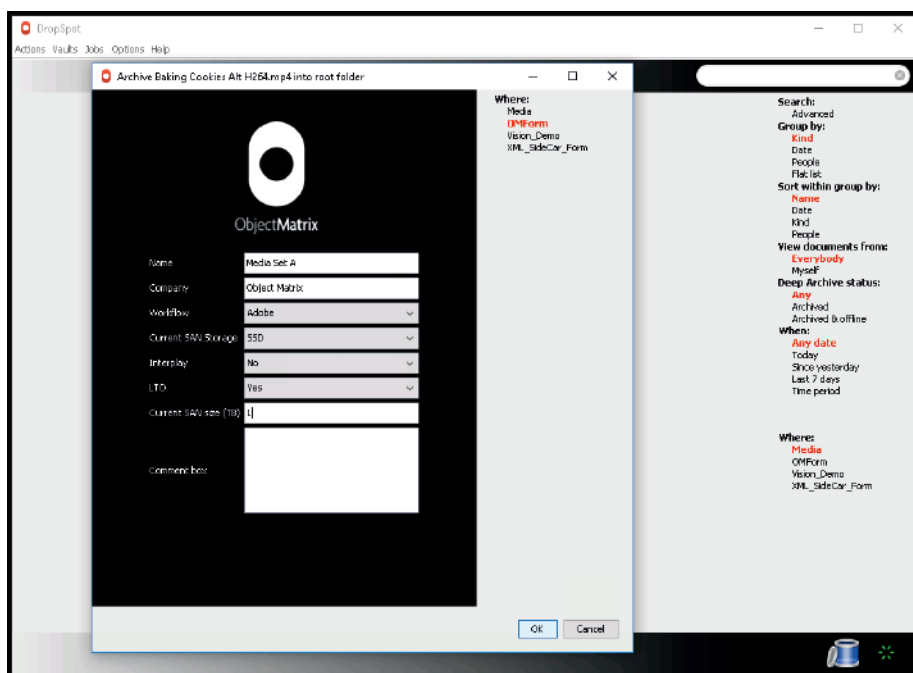
Search, find and reuse

- Search media, EXIF, XMP, AS10, AS11 or bespoke metadata to easily find assets within the storage.
- Using the Object Matrix applications, including the intuitive Vision web interface, you can easily browse, find, restore and manage content.
- Fast restore of assets allows projects to be worked on quickly and while the ideas are still fresh in the editors’ minds.

Configuring client machines - Install MatrixStore FileSystem (MXFS) application on Windows, Mac or Linux for simple, easy, access directly to the MatrixStore. It represents the MatrixStore vault as a local mount point so appears as a large storage pool to the clients. User access ensures employees only have access to the projects or asset they are allowed to see. Options to automount, as well as tight integrations with existing MAM solutions, will enable MatrixStore to fit most workflows and ensures the best user experience.

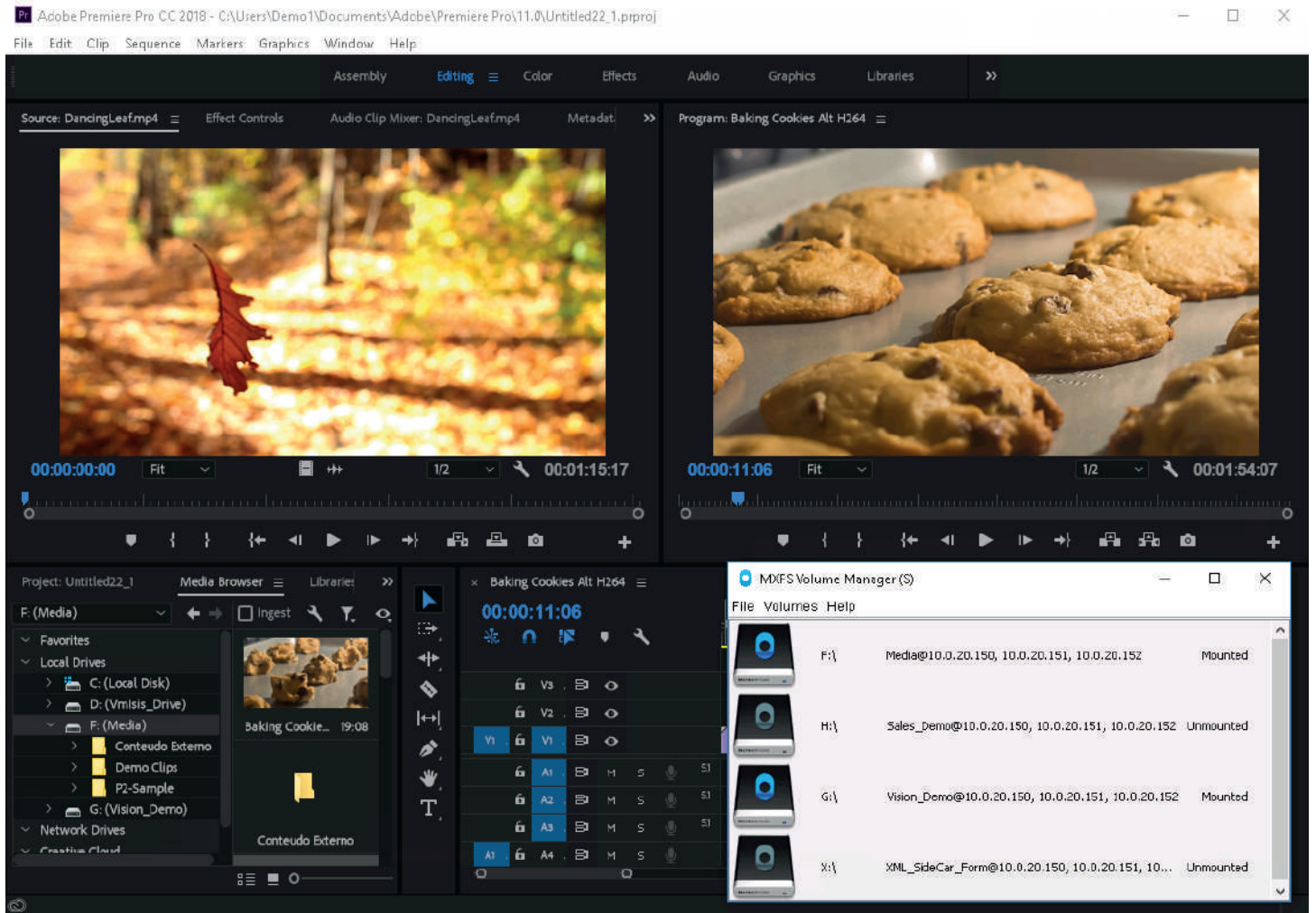
Flexible - Adding nodes - Any MatrixStore certified node of any size, including larger capacity disk drives being developed, can simply be added at any time. There is no upper limit on the number of nodes and a single file system across the cluster can scale to billions of files and petabytes of content, with no downtime or loss in performance.

Multi - Generational - MatrixStore future proofs access to content. Media files will always be in a non-proprietary format. Data migration to new technologies happens automatically in the box by simply “decommissioning” a node in the Admin GUI.



This could be due to new nodes with higher spec hardware such as 40/100GbE NICs and higher capacity disks being more readily available.

Network settings - Full 10GbE and 40GbE supported. No specific network settings are required on client machines but for best performance see our support pages for the latest updates on thumbnails, scanning software and other great tips when using a MatrixStore.



Adobe Premiere Pro CC performs well with fast storage like Object Matrix.

Performance and Metrics

Direct Connection from client machine to the nodes:

- ▶ Large files using MatrixStore API (DropSpot, MAM, etc.)
 - 1 client, 1 thread: Write at 360MB/sec for a single file, Read at 230MB/sec.
 - 1 client, 3 threads: Write at 1000MB/sec (330MB/sec each single file). Read at 410MB/sec (136MB/sec each).
 - 300MB/sec per node in average with multiple files and clients. As an example, 10 nodes would give 3000MB/sec.
- ▶ Large files using MXFS
 - 1 client, 1 thread: Write at 360MB/sec for a single file, Read at 160MB/sec.
 - 1 client, 3 threads: Write at 400MB/sec (135MB/sec each single file). Read at 360MB/sec (120MB/sec each).
 - 300MB/sec per node in average with multiple files and clients. As an example, 10 nodes would give 3000MB/sec.
- ▶ Small files using MatrixStore API (10KB files)
 - 1 client, 1 thread: Writing 45 object/sec, Reading 90 objects/sec, Deleting 60 object/sec
 - 1 client, 20 threads: Writing 880 object/sec, Reading 1500 objects/sec, Deleting 660 object/sec
- ▶ Small files using MXFS (12MB files)
 - 1 client, 1 thread: Write 15000 files using 64KB buffers - 52 MB/s, 4.5 files/sec
 - 1 client, 1 thread: Read 2000 files using 64KB buffer - 48MB/s, 4.1 files/sec
 - 1 client, 1 thread: Delete 2000 files - 3.5 files/sec

Connection through the hub:

- ▶ Large files
 - 1 client, 1 thread: Write at 300MB/sec for a single file, Read at 150MB/sec.
 - 440MB/sec per hub in average with multiple files.

Support and Training

As with all MatrixStore support, the best way to ask a question is through our support portal.

- <http://support.object-matrix.com/support/home>

There is also a host of useful articles and a forum to discuss workflows. In every MatrixStore application, a user guide can be found on the usual help menu.

We also run three or four MatrixStore certification courses each year along with an online mini course. These give a full overview of the complete MatrixStore architecture and in-depth training on all MatrixStore tools and interfaces.

For more information about Adobe and the Creative Cloud video tools, visit:

<https://www.adobe.com/creativecloud/video/pro-video-tools.html>

About Object Matrix

Object Matrix provides digital content governance & object storage platforms. The company was built on the philosophy that archive systems should be scalable and interoperable, as well as ensuring instant access to data and metadata. Its flagship product, MatrixStore, is an integrated object storage software solution providing protection and governance for the lifetime of any digital content. It's used by global organisations that create, curate, and distribute video content, including NBC Universal, TV Globo, the BBC & BT.

www.object-matrix.com

Contact Object Matrix Without Delay

Contact us to find out how Object Matrix can help you and your organisation to resolve your storage challenges:



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