



Scalable Strategies for Massive File Handling in the Cloud

The Primary Obstacle

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Cloud tools deliver significant gains in flexibility, security, intelligence, and collaboration for organizations across industries. However, for industries that manage complex, multi-gigabyte deliverables, such as architecture, engineering, and construction (AEC) and media and entertainment (M&E), a full transition to the cloud remains challenging.

The primary obstacle: handling massive files efficiently in a cloud environment.

What is File Handling?

File handling refers to editing, copying, and moving files. In cloud environments, file handling also includes uploading, downloading, sharing, and storing files. The goal is to manage data flow between applications and storage systems safely and efficiently.

As file sizes increase, "handling" becomes more complex. Beyond simple operations, organizations must manage files too large for traditional systems to process effectively.

Note: File handling differs from file synchronization. While a synchronized folder keeps files identical across multiple locations to ensure access to the latest version, file handling covers the broader lifecycle of authoring, sharing, editing, reviewing, and finalizing deliverables.

The Challenges of Massive File Handling

Most operating systems and networks can manage typical documents without issue. Problems emerge when teams begin working with gigabyte-scale files such as AutoCAD files, BIM models, Civil 3D renderings, or Adobe Premiere Pro projects.

Desktop authoring tools like AutoCAD, Civil 3D, Revit, and Adobe Premiere Pro aren't designed for the cloud. Their built-in mechanisms for collaborating, linking, versioning, and file locking work seamlessly on local systems, but often fail when extended to the cloud, especially as file sizes grow.

At the core of the issue is the requirement to process large files in their entirety for each operation. Smaller files (e.g., under 300 MB) typically perform well, but once files reach truly massive, multi-gigabyte sizes, handling them efficiently demands a different architectural approach.

To address these limitations, many teams continue to rely on on-premises servers, direct wired internet connections, manual file management, and intricate workarounds to avoid crashes and bandwidth strain.

Common pain points include:

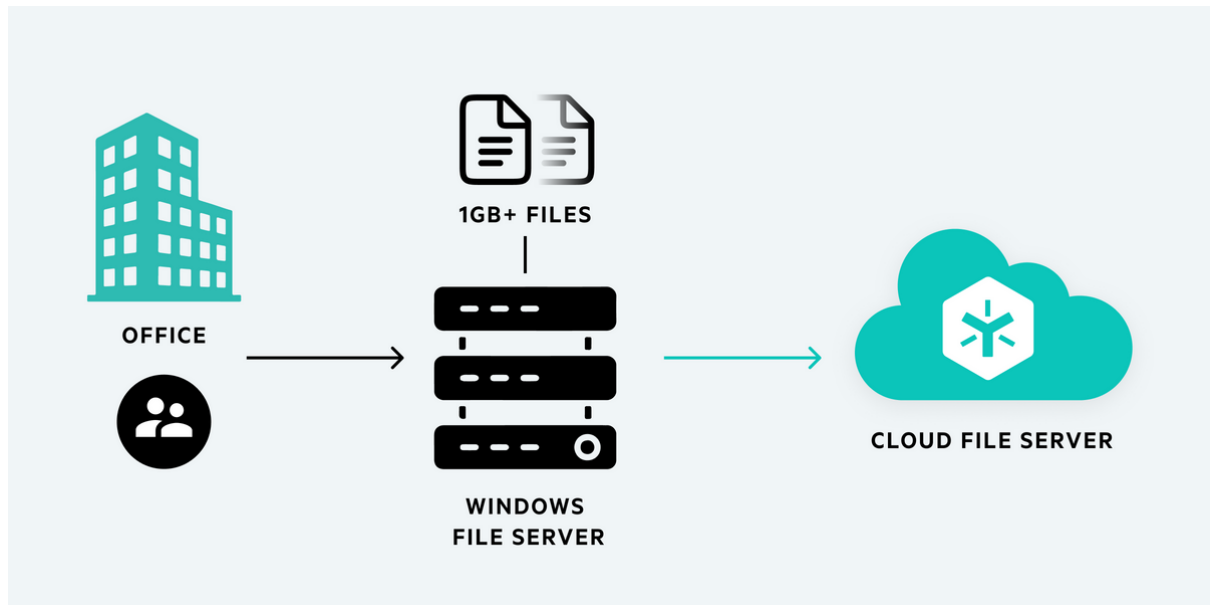
- Long file opening times, slow uploads/downloads, and inefficient caching
- Frequent screen freezes, failed renderings, content misalignments, and delays
- Inefficient version control, leading to lost work and version uncertainty

Egnyte's Evolving Approach to Massive File Handling

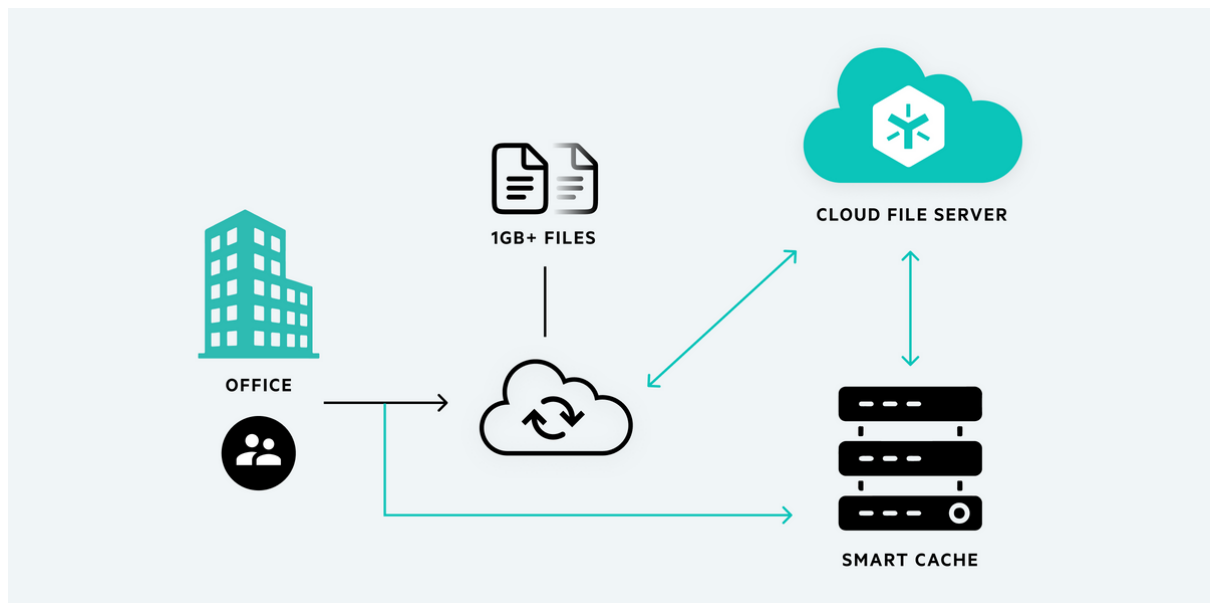
As deliverables became more complex, files grew massive, not just as a singular file, but also because smaller files are combined into a single deliverable—common with assets like large videos.

When users' changes need to be synced, a server and a client work together to match the full file on both sides and reconcile the changes. This method proved unscalable for larger deliverables, and Egnyte's Delta Sync helped ease the burden on devices and network latency by only syncing changes back to the cloud. Delta Sync put the server and client in lockstep—the file only needed to be on the server side, while the client side just kept track of what was changed to make syncing easier and quicker.

However, these large files did not end up living in the cloud; they were stored on an on-premises file server for office employees. Egnyte moved some operations to the cloud, but not all.



To help with bandwidth demands and internet connection limitations, Egnyte introduced Storage Sync to help move large files and any changes from users back to the server. We iterated on that technology, and the result was Smart Cache, which intelligently made large files quicker to access and share, without needing to connect to the server directly. This helped optimize bandwidth usage.

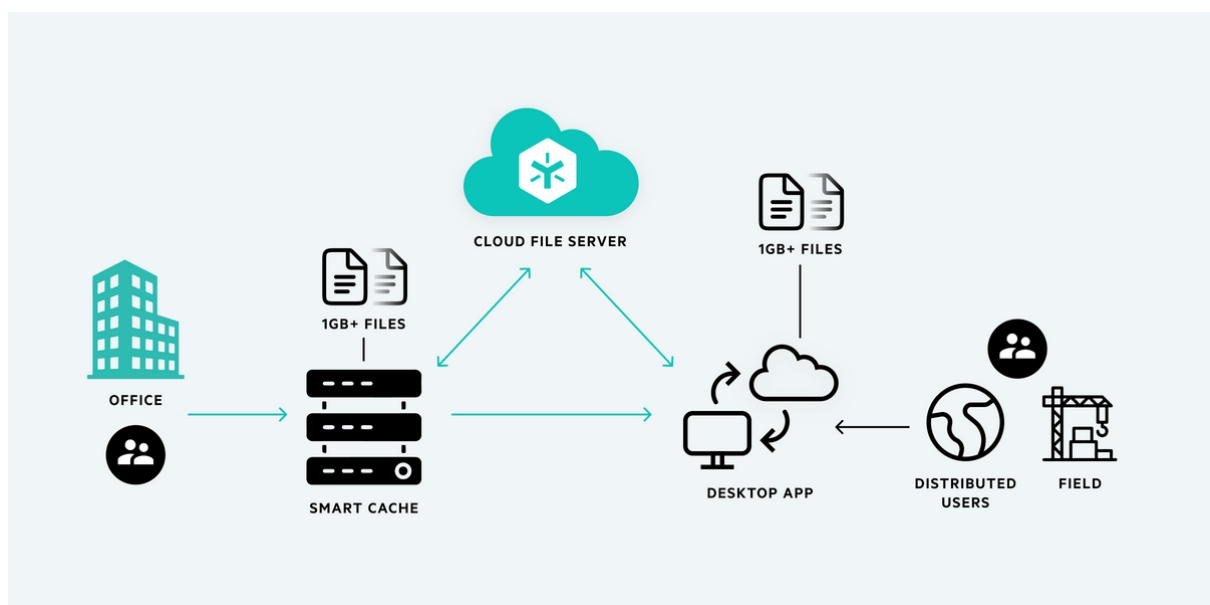


Benefits of Storage Sync and Smart Cache include:

- Network optimization
- Streamlined management of AEC and M&E applications that addressed the complexities of application locking and linking nuances
- Automated workflows around indexing
- VDI (virtual desktop infrastructure)

When remote and hybrid work became the standard over recent years, this caching infrastructure needed to evolve. What makes the Smart Cache appliance so valuable is that it caches files closer to the user, essentially meaning they don't need to travel as far to be accessed. On top of that, it intelligently managed the flow of files to make the most of available bandwidth and storage.

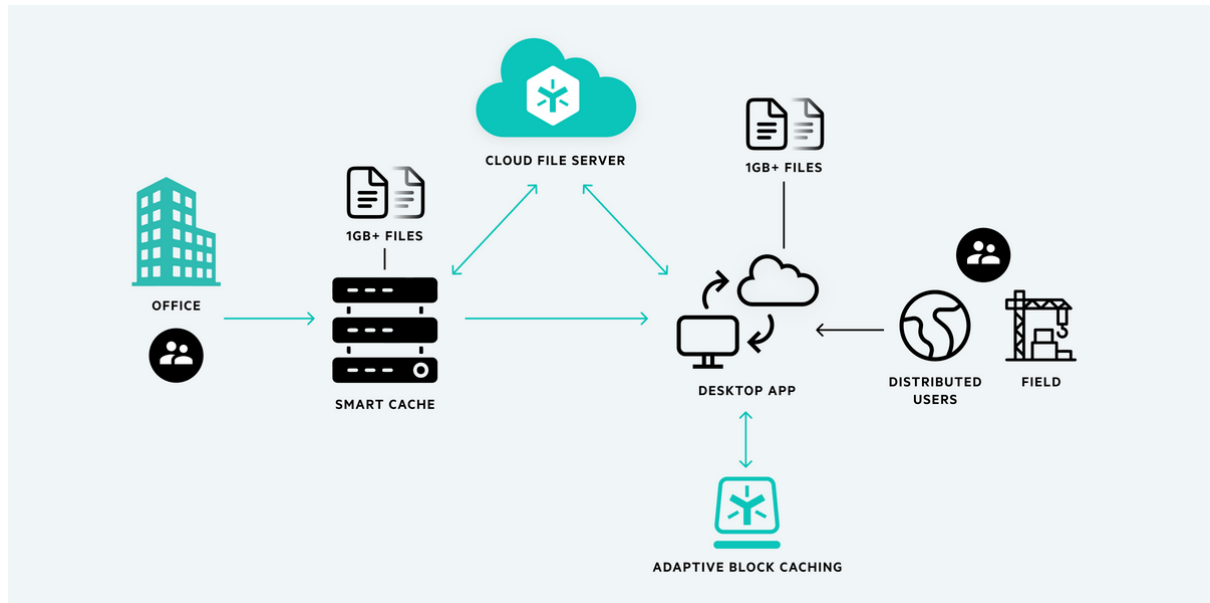
To help support remote users, we iterated on the Desktop Application to support caching for remote users, right on the desktop. This approach used offline sync, pinning files for offline access, and streamlined repeat access. This helped reduce latency concerns by bringing the cache right onto the desktop. However, the experience of being in an office and benefiting from a smart cache couldn't be replicated.



That's why the next iteration of our massive file support and caching functionality is Adaptive Block Caching (ABC). ABC takes massive files and chunks them for streamlined uploads, downloads, opens, and caching.

Like Delta Sync, ABC enables a differential sync that takes changed blocks on the client side and syncs them with the full file version in the cloud server. This opens the door to a more efficient versioning, since the entire file doesn't need to be cached and synced after every change.

What Smart Cache did for office users, ABC does for remote users. With ABC enabled, the Desktop Application essentially forms a local cache of massive files that can be accessed in chunks rather than in their entirety.



Adaptive Block Caching: Cheat Code for Massive Files in the Cloud

ABC is Egnyte's latest innovation for improving massive file handling. It addresses three primary challenges:

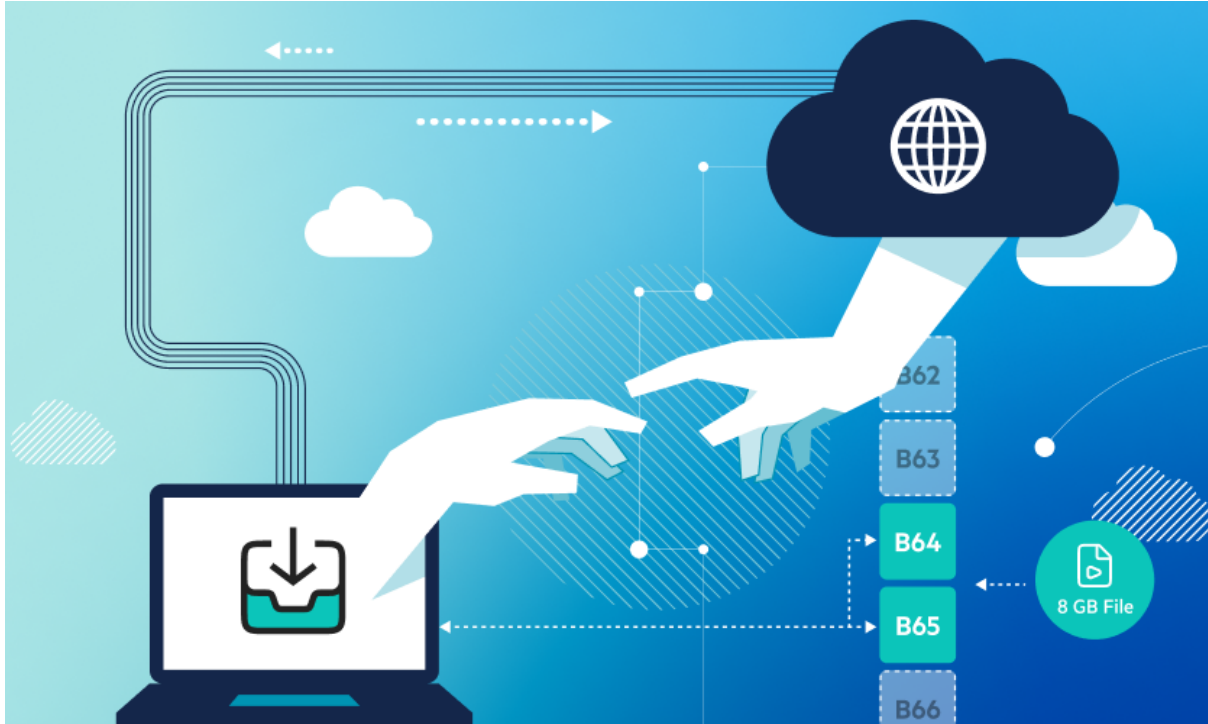
1. Slow file access, inefficient caching, and slow uploads/downloads that strain devices and increase network latency
2. Buffering, freezes, and misaligned content that disrupt user experiences on complex media projects
3. Inefficient file versioning that causes lost work and uncertainty around the latest version

How ABC Works

Here's how ABC speeds up working with massive files:

- **Block-level handling:** Files are cached in smaller blocks rather than in full, enabling smoother uploads, downloads, and opens. Previously accessed blocks are pinned, allowing users to resume work where they left off. Linked files (e.g., AutoCAD xrefs) are automatically reopened as needed.

- **Predictive file streaming:** For video and media workflows, ABC preloads future file blocks as users work, like video streaming. This reduces buffering, misalignment, and other performance disruptions.
- **Optimized version keeping:** Instead of storing full versions of a massive file with each change, ABC retains one complete version and tracks only modified blocks. This reduces storage requirements while maintaining a transparent version history.



Key Benefits

ABC improves how teams work with massive files with:

- Persistent, up-to-date caching via the Egnite desktop experience (Windows or Mac) for faster uploads, downloads, and opens
- Smoother performance for large media and design projects with no freezes, buffers, or delays
- Optimized versioning provides transparent history, quick recovery, and storage efficiency

	Deployment	Cost	Requirements	Ideal Use Case	Typical Work Location
Smart Cache	Virtual Machine	Available on upper-tier plans	Fast internet connection	In-office collaboration on large files	Office
Adaptive Block Caching (ABC)	Desktop Application	Add-on package	Requires purchase	Massive files handling (gigabyte range files) from outside of the office	Office, home, or field
Desktop Application In-Built Cache	Desktop Application	Included in all plans	Works best on small to medium size files	Accessing previously worked on files	Office, home, or the field

Key Use Cases

Egnyte supports access via the cloud, the Desktop Application, and mobile devices. For massive file operations, desktop access remains most relevant, as specialized software typically runs locally.

Bridging On-Premises Infrastructure with the Cloud

Organizations with centralized Microsoft file server or NAS devices, which serve as their main repository, can integrate Egnyte to combine the control of on-premises systems with the flexibility of the cloud.

- **In-office users:** Deploy Smart Cache for LAN-like performance and reduced bandwidth load. Files are retrieved from the local cache rather than the cloud, improving speed and efficiency. The other option is to leverage ABC to access and work on files.
- **Distributed users:** Use ABC with the Desktop Application for high performance without relying on local infrastructure. Files are streamed in blocks, allowing work to begin immediately while remaining blocks load dynamically.

- **Field access:** For users in the field or on construction sites, ABC provides reliable access to large assets despite limited bandwidth. Only relevant portions of a file are fetched, reducing device strain and enabling quick edits or reviews.

Creative Project Collaboration

Creative teams often rely on wired connections, local file servers, and/or external hard drives for large video or design projects. Egnyte simplifies this model:

- **In-office:** Smart Cache or ABC reduces dependence on wired setups and mitigates network congestion.
- **Remote teams:** ABC enables real-time collaboration without shipping drives or duplicating large files. Editors can work immediately as portions of a file stream in, maintaining sync across contributors and avoiding version confusion.

Field Collaboration

A contractor, engineer, or architect working on-site can securely access design files through the Desktop Application with ABC enabled. Even with limited connectivity, only the required sections of large CAD, BIM, or 3D rendering files are fetched and displayed—ensuring up-to-date information without device overload or version discrepancies.

Empower Your Teams with Faster Collaboration on Massive Files

Most cloud collaboration solutions can store massive files, but few enable teams to work with them effectively. Egnyte closes that gap by delivering the performance, reliability, and scalability needed for true large-file collaboration.

With Smart Cache, the Egnyte Desktop Application, and ABC, Egnyte enables seamless handling of massive files, whether users are in the office, at home, or in the field. And businesses that rely on mission-critical content such as CAD drawings, BIM models, and media files can work in the cloud transparently with faster access, reduced latency, and transparent version control across every project stage.

For more information on how Egnyte can modernize and optimize your large-file workflows, contact your Egnyte representative or visit [Egnyte.com](https://www.egnyte.com).



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