

Share Organization and File Server Migration with Morro Migrate

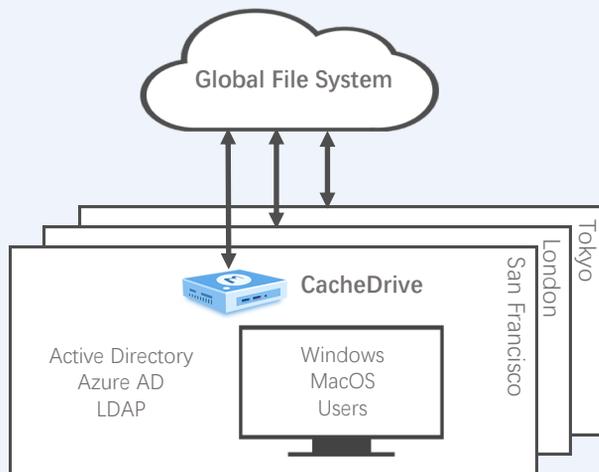
Morro Data provides enterprise global file services with a cloud-centric distributed file sync architecture. Powered by a global file system, CacheDrive gateways deployed on premises, in cloud, and at home offices present the fast, secure, and familiar SMB interface to users while syncing files in real time. Applications include multi-site sync, collaboration, cloud backup, and archive.

Morro Data enables data consolidation by offering different share types for multiple tiers of data applications. Share types include sync, replication, archive, and collaboration. Shares are created and managed in the cloud management portal and all shares are represented in a single global namespace with scalable capacity.

Global File System

Share Types: Collaborate, Sync, Replicate, Archive

- ✓ Data in cloud
- ✓ CacheDrives on premises, in cloud, and at home for multisite sync
- ✓ SMB interface and NAS speed
- ✓ Collaborate with high performance anywhere



Share Types

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Sync / Collaborate Files are synced to the cloud and CacheDrives, for multi-site file sync and remote team collaboration. Collaborate is a sub-type of Sync share.
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Replicate Files are one-way synced to the cloud and other sites, for replication and file transfer.
- 
Archive Files are synced to the cloud only, for archive.

Single pane-of-glass to manage and monitor global sites

File system, CacheDrive gateways, and users for global sites are managed in the Morro Cloud Manager. From data migration to audit, MCM provides a single pane-of-glass for all phases of management of a hybrid cloud file system at the global scale.

CacheDrive to access the complete file system

Files are stored in the cloud and the complete file system is synced to the CacheDrive gateway at each site. Each CacheDrive syncs the complete file system metadata and keeps most recently accessed files in the cache for fast SMB access.

	Sync Share	Replicate Share	Archive Share
Write Access	Multiple CacheDrives	One	One
Read Access	Multiple CacheDrives	Multiple	Cloud Only
Compression	✓	✓	
Deduplication	✓	✓	
Versioning	✓	✓	✓
Selective share mapping	✓	✓	
Multisite file sync	✓		
SharePoint Sync	✓		
Main Usage	Sync	Onboarding and Replication	Archive

Sync Share

Sync share is used to sync files among multiple CacheDrive sources. The Morro Global File System resolves file conflicts (two sites writing the same file) and manages file locking. Sync share supports deduplication, versioning, compression, and encryption. Sites can be easily added by deploying CacheDrive at new site by quickly syncing file system metadata from the cloud. Sync share supports time-shift option.

Sync Share with Remote Team Collaboration

Remote Team Collaboration is an advanced option of the Sync share with QoS and file locking. Existing applications supported include Autodesk Revit, AutoCAD, Civil3D, Microstation, etc. For details, please consult with additional documents.

Replicate Share

Replicate share is used to move large amount of data from on premises to cloud and optionally to other sites. Replicate share does not need the sophisticated conflict checking of Sync share so it can transfer files at up to 3 times faster. For this reason, Replicate share is usually used for onboarding, among other uses. After onboarding is complete, Replicate share can be converted to Sync share if so desired. Replicate share supports deduplication, versioning, compression, encryption, sync on schedule, and manual sync.

Archive Share

Archive share stores files in the native format of the cloud provider and is ideal for archival applications. User can add optional configurations to cloud buckets per cloud provider features such as encryption, versioning, and immutability. Existing bucket can be initially synced down to the CacheDrive as metadata and files can be downloaded on demand. User can retrieve data using the cloud storage provider Web interface. Archive share functions just like a NAS share with cache acceleration but is limited to a single CacheDrive and does not support cloud-to-CacheDrive sync.

Sync Share Quality of Service

Sync share is used for multisite file sharing and collaboration. Usually, the data of an organization is divided into multiple shares. Some are separated by departments or regions, some by retention policy such as primary/secondary/archive, and others for historical reasons with each share hosting data from a legacy file server. To ensure that data is synced intelligently between sites given the network latency and limited Internet bandwidth, Sync Share QoS controls are applied at the share level. Each share can be assigned a level of sync priority. High priority is automatically set when the RTC setting is applied to the share. The following is the recommended guideline for sync priorities according to the data types in the share. A share may be set to any of the three levels of the sync priorities.

Application \ Share Sync Priority	High	Medium	Low
Revit	✓		
AutoCAD, Civil3D, Microstation	✓		
Office, Adobe CS		✓	
PDF		✓	
JPEG, MPEG			✓
GIS			✓
Backup			✓
Archive			✓
Custom Settings	✓	✓	✓

Recommended Share Organization for optimal sync performance

There are many ways to organize a file system. To achieve the best sync performance, it is recommended to divide the file system into as many shares to allow for per share fine-grained sync priority control outlined in the above table. The following share organization is an example:

DFS Root Share A

- Sync Share A1 (with high priority data)
- Sync Share A2 (with low priority data)

DFS Root Share B

- Sync Share B1 (with high priority data)
- Sync Share B2 (with low priority data)

Dividing the file system into multiple shares of different data types allows precise control of the Sync Share QoS. If needed the DFS Root Share feature can be used to aggregate the shares. In the above example, top level shares A and B are created to aggregate the shares and are used as access entry paths. In this way, a legacy share with mixed high and low priority data types separated in different top level folders can be assigned more precise sync priorities. The top level folders can be set up as sync shares (Share A1, A2) and the original top level share can be configured as a DFS Root share (Share A). This way end-users will continue to see the top level share and the folders below as before, but each top-level folder (now a share) can have a sync priority of its own.

Domain-based DFS Namespace

Windows server Domain-based DFS Namespace can be optionally set up so that users at different sites can access shares on different CacheDrives using the same namespace name.

Onboarding with Morro Migrate



MORRO MIGRATE

Managed data migration from on premises source file server to cloud

Uploading unlimited data size managed by the CacheDrive

Continuous file access during upload through the CacheDrive

SCAN Phase

Traverse source file server, check permissions. Source file server can still be in normal use.

SEED Phase

Copy source metadata to CacheDrive. Source file server and CacheDrive share cannot be accessed.

UPLOAD Phase

Upload files to the cloud. After UPLOAD starts, all file access should cutover from the source server to the CacheDrive so any file updates after seeding can be uploaded. All files can be accessed on the CacheDrive during the UPLOAD Phase.

STEP 1 – Plan Your File System

- Determine the number of shares, for what data and permission settings.
- Plan your data migration on a share by share basis. Each job in Morro Migrate is defined as the pairing of a source share and a destination Replicate share.
- It is more efficient to **organize the folder structure including the correct permission settings on a local server before running Morro Migrate**, to avoid the time-consuming upload of the bulk changes later.

STEP 2 – Scan Your Data

- Define a Morro Migrate job in the Morro Cloud Manager > Morro Migrate App.
- Use Morro Migrate SCAN to check the data on the local server for errors and data size.

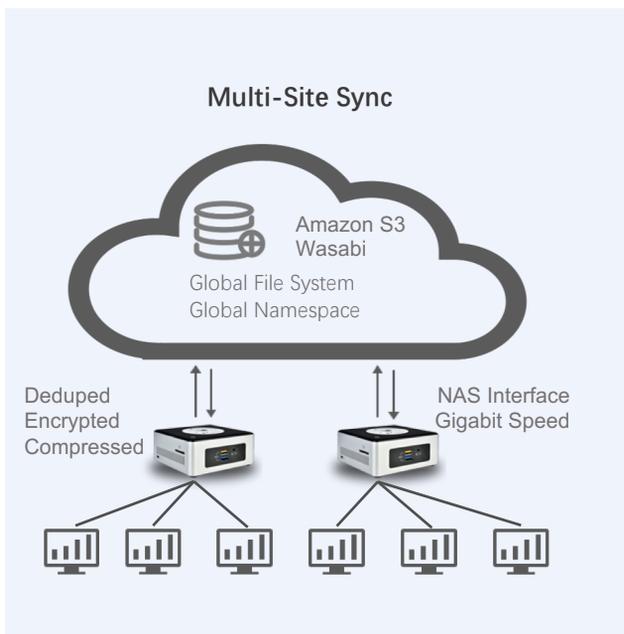
STEP 3 – Migrate

- Run Morro Migrate SEED to copy metadata from local server to CacheDrive
- After SEED completion, proceed to Morro Migrate UPLOAD. Files will be uploaded to the cloud as a Replicate share.
- During Morro Migrate UPLOAD phase, users should not update the source server and should read/write files from the CacheDrive only.**
- After UPLOAD completes, perform Incremental Migrate if necessary.**
- After the final UPLOAD is completed, the share can be converted from Replicate share to Sync share and mapped to other CacheDrives.**

Did You Know

Morro Global File System

The Morro global file system provides multi-site collaborative file services for sync, lock, transfer, and caching. Interfaces supported include SMB (Windows, Mac) and Web with ACL. At each CacheDrive, users complete unlimited file system is presented as a single namespace.



Object Storage

Morro Data supports S3 compatible object storage including AWS S3 and Azure, presenting a single interface to different storage tiers and cloud providers for collaboration/sync (primary), transfer/replication, backup, and archive.



Global File Services

Consolidated Data Management

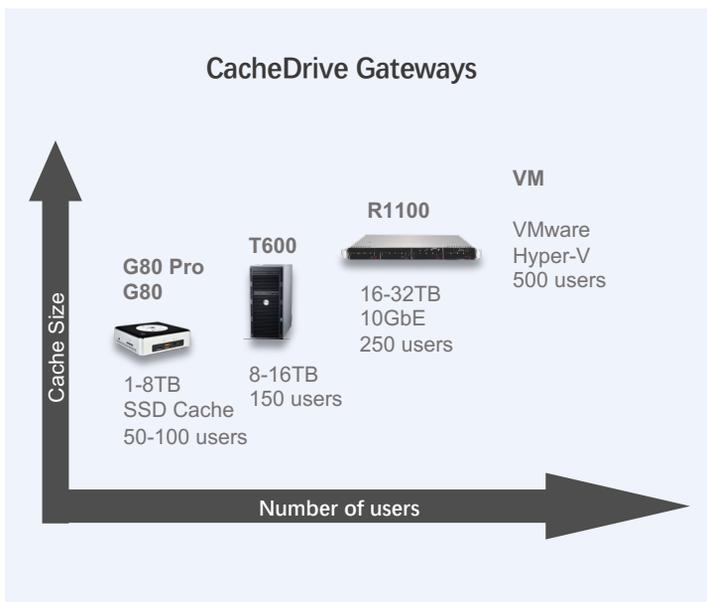
Unlimited cloud capacity
 Primary + Backup in one global namespace
 Multiple cloud providers to save cost
 Deduped and Encrypted

Multi-Site File Sync and Lock

NAS Interface for cloud data. No VPN.
 Global file locking
 Add CacheDrive for fast Disaster Recovery
 Large File Transfer

Cloud-to-Cloud Sync

Sync with SharePoint
 Backup to economic cloud storage
 Business Continuity
 User error recovery



Morro Data Features

File Services	
Consolidated Data Management	NAS access with cloud reliability for primary and secondary data
Multi-Site Sync	Store files in cloud and sync files locally with cache. Add CacheDrive for easy expansion and instant disaster recovery.
Cloud-to-Cloud Sync	Sync and backup SharePoint and other cloud files
Global File System	
Global Namespace	Data in cloud and synced across gateways in a single namespace. Gateway cache enables high performance access to unlimited file system.
Unlimited Storage	Choice of Cloud Storage providers for primary and secondary data.
Storage Pool	Pool specifies where and how data is stored and synced. A pool contains multiple shares. Pool types include Sync, Replicate, and Gateway.
Share Access	Network share with user access and gateway access controls
Global File Locking	Lock Office and other application files across gateways for remote collaboration.
Disaster Recovery	Fast metadata sync for replacement gateway for full file system access.
File Versioning	Version control of 1, 30, 300, or unlimited versions.
Prefetch	Automatic download to destination gateway vs. on-demand download.
Deduplication	Files are de-duplicated to save cloud storage and upload bandwidth
Compression	Files are compressed to save cloud storage and upload bandwidth
Bandwidth Limiting	Control sync window and sync bandwidth per share
Share Mapping	Shares can be optionally mapped to gateways for security
Advanced SMB Share Controls	Options to enable oplocks and to use Extended Attributes to save streams
Security	
Encryption	Files are encrypted both in transit and at rest in cloud
Access Based Enumeration	Hidden shares
Web Access Security	ACL-based file access permission
User Management	
Users and Groups	User and Group access permissions
Active Directory	Supports Microsoft Active Directory and Azure AD
User Permissions	Access permission per user/group/location (read only / RW / no access)
Location Based Permissions	File access based on Gateway (location) and on/off premises
Share Folder Security	Manage shared folder's ownership and access control list
System Interface	
NAS Interface	Present shares the same as NAS, with unlimited capacity
Local Network Interface	Support SMB protocol version 2.0/2.1/3.0/3.1 working with Windows and MacOS clients
Client OS Support	Windows, MAC OSX, Linux, Major Browser
Web Interface	Team Portal for ACL-based file access and management Upload files and create folders to shares. Manage file versions, download, rename, copy, move, delete, purge files, create share link for files.
Morro Cloud Manager	
Gateway Management	Globally manage all gateways on MCM
File System Management	Globally manage all shares in a Global Namespace
Dashboard	Usage analytics and system diagram
Analytics	Storage usage, User activities, and Data transfer activities
Role Based Management	Business Admin, Global Admin, Regular User
Users and Groups	Users, Primary Group, Secondary Groups
Logs	By category – team/device/file system By severity – information/warning/error

