

# Building a Bridge between Cloud Storage and GPFS

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## Traditional File Storage

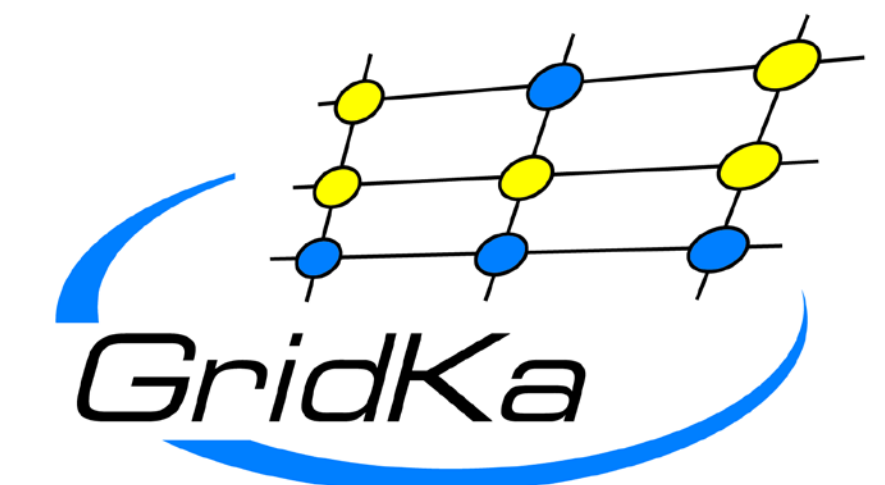
- POSIX compliant
- File system hierarchy
- Amendable data

## Object/Cloud Storage

- Non-POSIX compliant
- Single storage pool
- Immutable data

## HEP – GridKa Tier 1 Center

- Storage Middleware (dCache, xrootd) relies on traditional file system semantics
- Name space/meta data separate from data (dCache)
- Files are immutable



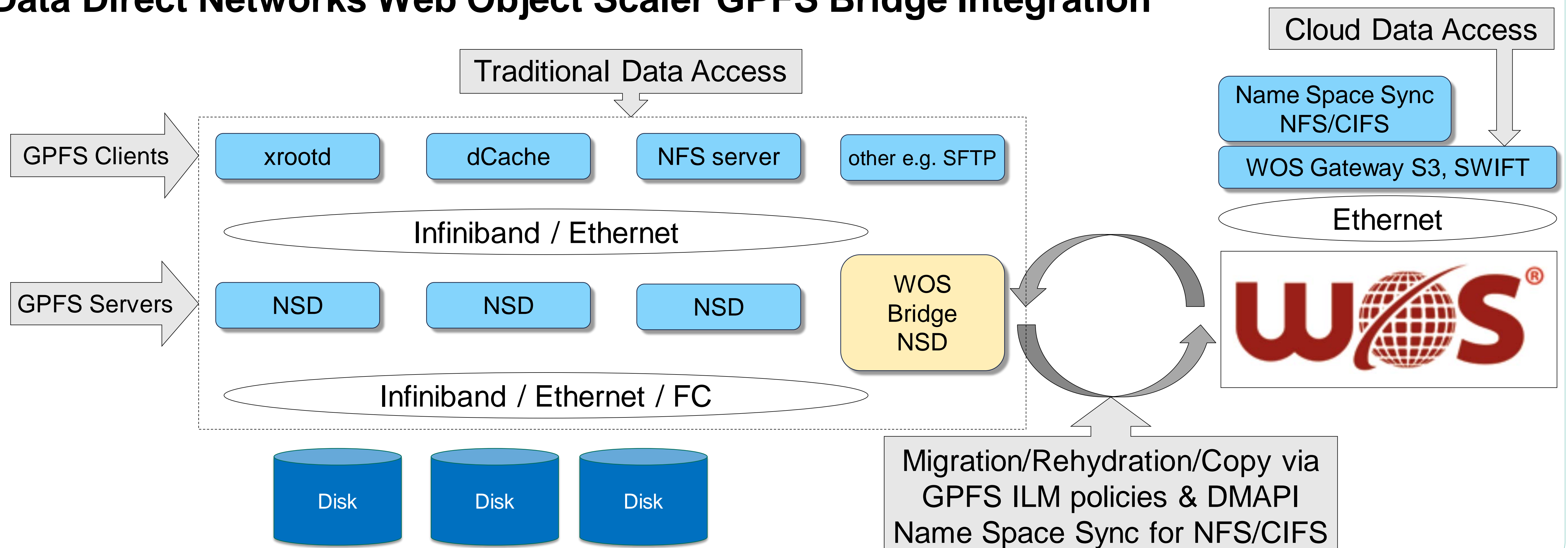
## Systems Biology, Climatology – Large Scale Data Facility

- Traditional NAS protocols NFS, CIFS, SFTP
- File system hierarchy used to organize data
- Files are mutable



**New possibilities by bridging between POSIX and object storage access models:  
HSM, additional access protocols**

## Data Direct Networks Web Object Scaler GPFS Bridge Integration



## GridKa & LSDF Prototype Setup

- 2 WOS Archive Nodes (4U, 60 disk, 2 10Gbit/s NIC) 480TB Storage
- GPFS Server, 1Gbit/s NIC, IB attached storage, GPFS-WOS bridge services: mover, dispatcher, DMAPI handler

## Migration Testing

- Continuous data ingest via xrootd 6.3TB/24k files
- New data is moved to WOS every hour via ILM & DMAPI
- 0 byte GPFS stubs remain

## Recall Testing

- Files are read directly from WOS through GPFS stub
- Allocated file size is temporary artifact

