QuObjects
QuObjects x DataCore vFilO
Object storage expansion and archive integrated solution
1. Expand object storage space
2. Archive savior: DataCore vFiLO
QuObjects is to provide the same object storage environment as AWS S3

HybridMount
Connect cloud Quickly

S3 Compatible

HBS3
Back up your NAS

Enjoy local connection speed.
You can connect to AWS S3 directly to enjoy the convenience.
NAS in the office backed up quickly
What should I do if I find that there is not enough Object Storage space?
Solution 1: Hardware external devices immediately expand the storage capacity of buckets

1. SAS JBOD (TL-R1220Sep-RP)
2. USB external hard drive (TR-004)
3. SATA external hard drive (TL-R400S)

The hardware installation content takes SAS JBOD as an example

- QNAP NAS
- PCIe SAS JBOD Card – QXP-1620S-B3616
- SAS JBOD TL-R1220Sep-RP
- SAS Cable
SAS JBOD expand the storage capacity of buckets - Two-step quick setup

1. **Expand storage pool**

   - **Resize volume**

2. **Resize volume**
Solution 2:
HybridMount to mount the second QuObjects storage space

HybridMount SMB can’t support QuObjects now!
Solution 3: VJBOD expand the storage capacity

1. Create a VJBOD
2. Create a shared folder and select the location of the VJBOD
## Overall comparison

<table>
<thead>
<tr>
<th></th>
<th>Connect the other NAS QuObjects</th>
<th>SAS JBOD</th>
<th>VJBOD</th>
<th>HybirdMount S3 QuObjects</th>
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<td><strong>Account management</strong></td>
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<td>The same Account</td>
<td>The same Account</td>
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<tr>
<td><strong>bucket</strong></td>
<td>Different bucket</td>
<td>The same bucket or you can create different bucket.</td>
<td>Different bucket</td>
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<td><strong>New bucket (Share folder) location</strong></td>
<td>The other NAS</td>
<td>Local</td>
<td>Local</td>
<td>The other NAS</td>
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<tr>
<td><strong>Hardware complexity</strong></td>
<td>easy</td>
<td>Hard (PCIe card + cable + expand device)</td>
<td>easy</td>
<td>easy</td>
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Performances will vary depending on the model and environment. For example: network 2.5G or 10G, HDD or SSD model, ARM or X86 model.
QuObjects and DataCore vFilO Integrated solution
Recommended models

SMB Object Storage

TVS-h1688X

- 16 bay
- Intel® Xeon® W-1250 6 cores 3.3 GHz processor (Max 4.7 GHz)
- 32 GB DDR4 ECC (2 x 16 GB)
- 2 x 10GBASE-T and 4 x 2.5GbE network port.

Enterprise Object Storage

TS-h2490FU

- 24-bay U.2 NVMe All Flash Array
- AMD EPYC™ 7302P 16 cores / 32 threads 3.0 GHz processor (Max 3.3 GHz)
- 256 GB RDIMM DDR4 ECC (8 x 32 GB)
- 2 x dual-port 25GbE SmartNICs
QuObjects

QuObjects x DataCore vFilO

Object storage expansion and archive integrated solution
Agenda for today

- DataCore SDS Portfolio Overview
- Why and When to consider vFilO
- Software components & Deployment Example
- Simple functional demo
- Conclusion
A Vision to Revolutionize the Storage Industry

DATA CORE

COMMON CONTROL PLANE
- Proactive Optimization
- Predictive Analytics
- Actionable Insights
- Management Interfaces

APPLICATION
- Bare Metal
- Virtualized
- Containers

ACCESS
- Block
- File
- Object

DATA SERVICES
- Simplified Provisioning
- Performance Acceleration
- Non-Disruptive Migration
- Intelligent Auto Data Placement
- Data Protection
- Replication & Recovery

PRIMARY STORAGE
- Hot - High Performance

SECONDARY STORAGE
- Cold - Low Cost

DATABASES
- High Performance Applications
- File Shares for Collaboration
- Backup Images and Snapshots
- Document Archive

STORAGE
- NVMe
- Fibre Channel
- iSCSI
- SAS/SATA
- NFS/SMB
- Cloud/S3

MANAGEMENT INTERFACES
- Proactive Optimization
- Predictive Analytics
- Actionable Insights
- Management Interfaces
## Comprehensive SDS Portfolio from DataCore

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<tr>
<th>Build New or Aggregate Existing Storage Infrastructure</th>
<th>New Massively Scalable Storage</th>
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<td>SAN / HCI</td>
<td>NAS / Global File System</td>
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<tr>
<th>Existing Data</th>
<th>Assimilate from Existing SAN</th>
<th>Assimilate from Existing Filers</th>
<th>Ingest from NAS, Tape, Object</th>
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<tr>
<td>Primary Access</td>
<td>iSCSI, FC</td>
<td>NFS, SMB</td>
<td>S3, HTTP</td>
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<td>Data Structure</td>
<td>Volume, LUN</td>
<td>Hierarchical</td>
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<td>Typical Range</td>
<td>10 TB – 200 TB</td>
<td>20 TB – 1 PB</td>
<td>100 TB – 100 PB</td>
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<td>Primary Use</td>
<td>Random Write Access</td>
<td>Collaboration</td>
<td>Archive and Content Delivery</td>
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- **Databases**, performance-hungry and business-critical applications, Edge/ROBO
- Distributed / multisite files, NAS aggregation, optimized data placement (on-prem & cloud)
- Global data management, archiving and backup, efficient media storage
In the beginning, a Single File Server Seemed Perfect

Good
- All files accessible centrally

Bad
- Fixed capacity
- Single point of failure

/Engineering /Sales /Marketing

Until it fills up!
Data Growth Leads to Disruptive Expansion

- Manually split shares between filers
- Copy files to new server
- Redirect apps & users to new locations
- Uneven loading & capacity consumption

Where did that file go?
Why and When to Consider vFilO

- Pool & load balance resources across existing NAS / filers in same campus
- Non-disruptively scale out NAS beyond capabilities of monolithic filer
- Enable file sharing across co-dependent sites (on-prem / cloud)
Files Scattered over Separate Systems

- Folders tied to hardware
- Some systems idle, others overwhelmed
- Premium space occupied with seldom used files
Pool & Load Balance Under Single Namespace

Central access point

vFilO

125 TB Pool

EFFECTS

- Decouple file shares from hardware devices & location
- Take full advantage of assets by properly distributing files without upsetting apps or users
vFilO Maximizes Value from Collection of on-prem Filers

**FUNCTION**
- Pool and load balance their resources
- Replicate between them
- Roll their shares up under a single namespace
- Offload inactive files to object/cloud storage

**BENEFITS**
- Optimal use of capacity
- Higher availability / durability
- Convenient global access
- Lower costs, reduce congestion
Offload Inactive Files to Lower-cost Storage

- Free up premium resources
- File names remain visible & are automatically recalled when accessed
Files Only Accessible Locally at Each Site

CORPORATE DATA CENTER

Applications

NFS
SMB

/L/Engineering

/Engineering 2

APPLICATIONS

LINUX
WINDOWS

REMOTE FACILITY

Applications

NFS
SMB

/Sales

/Marketing

APPLICATIONS

LINUX
WINDOWS

Files Only Accessible Locally at Each Site
Collaborate Effectively Between Sites

• Enable selective file sharing and replication for apps and users at different locations
• Switch workloads to remote sites during peak periods or site outages/disasters
• Migrate workloads better addressed at other facilities
Access Files Locally, Share Globally

- Bi-directional Metadata Replication
- Cross-site File Updates & Retrieval
- OBJECT STORAGE
Software Components

ANVIL
- Metadata store
- Continually evaluates file placement – "Sweeper"
- Schedules jobs
- API end-point for all metadata, objectives, etc.

DSX
- Executes move jobs
- Moves NAS to Cloud, Cloud to NAS
- Live Mobility – proxy for writes
Deployment Sample: SMB

TVS-h1688X

Anvil: 8vCPU, 16GB RAM, OS: 200GB / Meta-data: 400GB, 10GbEx2
DSX: 4vCPU, 8GB RAM, OS: 100GB / Data: TBD, 10GbEx2

Meta-data

HB

Active Data

In-Active Archiving

QuObjects

QuObjects

Meta-data
Deployment Sample: Enterprise

Anvil: 16vCPU, 64GB RAM, OS: 200GB / Meta-data: 400GB, 10GbEx2
DSX: 8vCPU, 32GB RAM, OS: 100GB / Data: TBD, 10GbEx2

TS-h2490FU
Sample Functions Demo

- Add storage system (ex: QuObjects)
- Automate file archiving to Object
- Assimilate existing files in share
- Change data location or multiple copies
How to add QuObjects to vFilO?
How to add QuObjects to vFilO?
Autonomic Data Placement

- High Performance
- High Resilience
- Low Cost
- Off Site

Policies
- Performance
- Resiliency
- Cost
- Location
- Aging

Specific or Fuzzy

Applications
- LINUX
- WINDOWS
- MacOS

Telemetry

Machine Learning

High Performance
High Resilience
Low Cost
Off Site
Simply State Your Objective(s)
How to automate file archiving to Object?
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Non-Disruptively Assimilate Existing Filers

Active files in NAS/filers

Choice of lower-cost cloud & object storage

Data already stored here
How to assimilate existing share in vFilO?
## vFilO Feature Overview

### CONSUMERS
- END USERS
- APPLICATION & WEB SERVICES
- DEVICES

### ACCESS METHODS
- NFS
- SMB

### OPERATION & INSIGHTS
- EXTENSIBLE METADATA
  - MULTI-SITE GLOBAL NAMESPACE
- DATA MIGRATION
  - PARALLEL NFS
- HISTORICAL / REAL-TIME CHARTS
  - POOLING, ASSIMILATION OF NAS/FILE SERVERS
- HEALTH & PERFORMANCE GRAPHS
  - SELF-SERVICE UNDELETE
- ALERTS
  - SNAPSHOTS / CLONES
- PROVISIONING
  - SYNCHRONOUS MIRroring

### DATA SERVICES
- SUPPORTED STORAGE
  - FILE
  - OBJECT
  - BLOCK
  - CLOUD

### COMMAND / CONTROL
- ACCESS CONTROLS
- CLI
- CONSOLE
- FILE GRANULARITY
- PLUG-INS

### FEATURES
- SUPPORTED STORAGE
  - *FOR INACTIVE FILES PLACED ON OBJECT/CLOUD STORAGE*
DataCore vFilO + QNAP

- Collaboration
- Log Management
- HPC / Big Data
- Application-centric Docs

Multimedia: Images, Streaming Content
(Photos, Videos, Music, …)

Machine-learning Optimization Based on Business Intent & Policies

- High Performance
- Low Cost

- Bridging file and object resource
- Simplify scale-out and management
- Automate file life-cycle placement and enhanced meta
Recommended models

SMB Object Storage

**TVS-h1688X**
- 16 bay
- Intel® Xeon® W-1250 6 cores 3.3 GHz processor (Max 4.7 GHz)
- 32 GB DDR4 ECC (2 x 16 GB)
- 2 x 10GBASE-T and 4 x 2.5GbE network port.

Enterprise Object Storage

**TS-h2490FU**
- 24-bay U.2 NVMe All Flash Array
- AMD EPYC™ 7302P 16 cores / 32 threads 3.0 GHz processor (Max 3.3 GHz)
- 256 GB RDIMM DDR4 ECC(8 x 32 GB)
- 2 x dual-port 25GbE SmartNICs