

# CLOUD FILE SYSTEMS: MODERN DATA STORAGE FOR A MULTI-CLOUD STRATEGY

BRIDGING THE GAP BETWEEN LEGACY AND  
MULTI-CLOUD DATA STORAGE INFRASTRUCTURES.

## MARKET LANDSCAPE REPORT

■ AUTHOR: Enrico Signoretti - GigaOm Analyst





AUTHORED BY GIGAOM ANALYST, ENRICO SIGNORETTI

## INTRODUCTION

With more and more enterprises embracing the cloud and moving their data and workloads between private and public infrastructures, independent software vendors (ISVs) and service providers are working to increase the number of storage options for clients. Initially, most providers started by offering block storage, usually attached to virtual machines for primary storage needs, followed by object storage for other workloads, but file systems today remain the most common way to store large amounts of unstructured data – data that needs to be accessed frequently and quickly.

Even though object storage is rising in popularity, scale-out file systems, often accessed via network protocols like NFS and SMB, are still the data storage of choice for a large number of workloads such as big data analytics, artificial intelligence/ machine learning (AI/ML), high performance compute (HPC), and more. Furthermore, legacy applications are usually written to work with a POSIX-compliant file system, enabling multiple applications access to the same data sets. Rewriting these old applications to take advantage of object stores is not always a viable option, so many end users are choosing to move their applications to the cloud as-is.

### Common solutions for cloud file systems include:

- **Scale-up file systems for legacy applications.** These are simple solutions deployed directly as-a-service from the service provider or installed on a virtual machine (VM). Performance depends on the resources available in the single instance, therefore this solution is not very scalable. It is usually very cost-effective though and could be a good fit to move to the cloud applications that do not need a lot of capacity or performance.
- **Traditional scale-out file systems.** Though not specifically designed for cloud infrastructures, these systems currently have a large installed base and well-known best practices that can help in the deployment and management process. They are less flexible than native cloud file systems.
- **File systems designed for the cloud.** This is a quickly maturing next-generation product category with solutions that are designed to take into account the latest cloud technology and characteristics.

Even though most of the cloud file system design principles are similar to other scale-out file systems available in the market, there are a few important differences that make them more suitable for cloud environments. These characteristics include:

- Granular scalability
- Simple and efficient cluster design layout
- Integrated multi-tiering
- Tools aimed at simplifying data migrations in multi-cloud environments

The scope of this report is to give a brief overview of the market landscape and analyze the most important aspects of cloud file system architectures available in the market. This report provides indications to help the end user design a modern storage infrastructure as the foundation for a solid multi-cloud infrastructure strategy.

### REPORT TOPICS

- Differences between traditional and cloud file systems
- Pros and cons of FS-as-a-Service or self-managed solutions
- Important characteristics of cloud file systems
- Applications and use cases
- File system integration with object storage to lower the \$/GB
- Common functionalities, front-end interfaces, and data services
- Data migrations and synchronization across clouds



**ANALYST ENRICO SIGNORETTI**

Enrico has **25+ years of industry experience** in technical product strategy and management roles. He has advised mid-market and large enterprises across numerous industries and software companies ranging from small ISVs to large providers.

Enrico is an **internationally renowned visionary author**, blogger, and speaker on the topic of data storage. He has tracked the changes in the storage industry as a Gigaom Research Analyst, Independent Analyst and contributor to the Register.

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