# CS5052 – Paper Review

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"BlueSky: A Cloud-Backed File System for the Enterprise"

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# INTRODUCTION:

BlueSky, a Cloud-Backed File System for Enterprise Uses, was created as a prototype to enable users to benefit from the dependability and substantial storage capacity of cloud providers without the need for specialised server hardware. Users could store data persistently in a cloud storage provider (Amazon S3 or Azure).

Clients that utilise BlueSky could access the storage via a proxy running on-site which caches low data to provide lower-latency responses, Scalability, availability, and a Secure file system.

The authors start by describing the limitations of the existing systems (traditional enterprise file systems, including network file systems, distributed file systems and object storage systems.

The existing infrastructure's vulnerabilities have been carefully identified, such as its inability to scale to meet the needs of major enterprises and its high maintenance requirements for reliability and availability.

Furthermore, security is a key component of these systems, and conventional systems lack the security capabilities required to safeguard company data from unauthorised access.

## OBJECTIVE:

The authors suggest a system called "BlueSky" that employs cloud storage for data storage and a caching layer on local storage to overcome these restrictions. They imply that their design is restricted by the enormous investment (in labour and capital) in well-established file system client software, resulting in the preservation of the existing end-system software.

The "BlueSky" prototype system also includes drivers for the Amazon EC2/S3 environment and Microsoft Azure, and it supports the NFS and CIFS network file system protocols.

The authors also conduct a variety of benchmarks to show that, with such a design, commodity cloud-based storage services can deliver performance comparable to that of local file servers for the capacity and working sets required by enterprise workloads, while still gaining the scalability and cost advantages of third-party cloud services.

## CONTRIBUTION:

The authors cover a variety of BlueSky's real-world applications throughout the paper, including its usage to support a file-sharing application in an enterprise environment.

Through a series of tests that assess BlueSky's functionality, scalability, and fault tolerance, they can establish its efficacy.

Benchmarking and comparisons are made between BlueSky and related enterprise file systems such as DepSky, Nasuni, and Cirtas' Bluejet, with the findings demonstrating considerable advantages in terms of scalability and dependability.

## NOVELTY:

The authors' work is regarded as unique, and they offer a fresh approach to the issue of enterprise file storage. BlueSky makes advantage of cloud storage to offer scalable and dependable storage as well as the essential security measures required by commercial users. The paper offers a fresh approach to an existing issue, even though it does not suggest a new experimental platform.

## EVALUATION:

According to evaluations made by the authors, BlueSky surpasses the shortcomings of the current systems and provides a workable option for enterprise data storage with respect to performance, scalability, and fault tolerance.

The studies conducted by the authors did not cover all possible circumstances, and additional testing and evaluation may be needed to completely determine the advantages and disadvantages of the suggested system. This is because every system has its downsides.

Monitoring how BlueSky operates in more complicated enterprise settings and with various workloads is what makes it intriguing.

While the authors have talked about the "*security*" aspects of BlueSky, such as object-level encryption, preventing malicious providers from selectively rolling backfile data, or its file system objects being individually encrypted (with AES) and protected with a keyed message authentication code (HMAC-SHA-256) by the proxy before uploading to the cloud service.

Although the authors note the system's security characteristics and the paper does not specifically address any security concerns that could come from it, more analysis of the system's security would be helpful before reaching any conclusions. A comparison of **BlueSky's (capital and labour)** capabilities to currently available enterprise file systems with real-world usage might also be made.

## CONCLUSION:

The tests show that BlueSky has considerable advantages over conventional enterprise storage systems, and the paper itself offers an intriguing and new solution to the issue of enterprise file storage.

If the system was evaluated in greater detail, particularly where the paper falls short in terms of security and cost analysis, the reader would be better equipped with meaningful information.

The paper offers a strong foundation for additional study in this area.

## QUESTIONS:

Q> What are the future development for BlueSky and cloud computing?

Q> Do you see BlueSky being adopted as an industry standard for major Cloud Service providers such as Microsoft or Amazon?

Q> As mentioned, there is a lack of security evaluations in the paper, do you plan to address these issues?

Q> What security issues could arise from "BlueSky"?

Q> Does BlueSky has its fair share of problems?

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