



Factcheck

Object Storage as a Storage Location for Veeam Backups

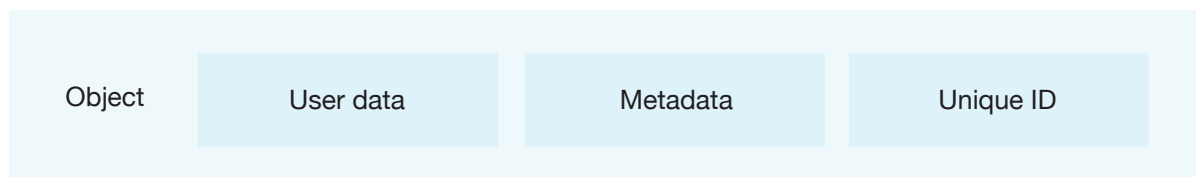


Object storage is becoming increasingly popular as a storage location for backups. Organizations are not only adopting cloud-based solutions; since the introduction of version 12, Veeam explicitly recommends the use of on-premises storage with an S3-compatible interface. Ease of use and built-in immutability through Object Locking strongly favor these solutions. However, using object storage as the sole storage method for Veeam backups should be critically evaluated.

Overview: Object Storage

Object storage fundamentally differs from file storage. In object storage, data is managed as independent units (objects) stored within a flat address space — often referred to as a storage pool or data lake. Each object consists of three main components:

- The actual user data
- Extensive metadata
- A unique identifier (ID)



Thanks to its flat address space, object storage can scale almost indefinitely, provided sufficient resources are available to create objects and recover data. Therefore, object storage solutions are typically organized into clusters, where each new node increases both storage capacity and performance for data access and processing—commonly known as a scale-out architecture.

Objects are accessed via REST-compliant APIs using standard HTTP commands such as PUT, GET, POST, and DELETE. With the unique ID and metadata, objects can be reliably located and restored. The most widely used protocol for this purpose is S3, originally developed by Amazon to store large amounts of data across distributed cloud infrastructures. Nowadays, numerous S3-compatible solutions are increasingly deployed in on-premises environments, allowing organizations to leverage the benefits of object storage while maintaining full data sovereignty.

Furthermore, S3-compatible storage solutions provide built-in immutability through object locking, ensuring that stored objects cannot be deleted within a predefined retention period.

Veeam V12 Direct-To-Object

Although object storage has long been used within Veeam as a target for backup archives, version 12 introduces Veeam's „Direct-to-Object,“ enabling object storage to be used directly as a primary (performance) storage destination. Instead of creating and securing a traditional file structure with volumes and shares, backup data can now be written directly to object storage and protected via Object Locking. Configuration is straightforward and fast, thanks to Veeam's intuitive user interface.

Several providers of S3-compatible storage appliances support this functionality, offering simplified configuration, enhanced security, and improved performance for both backup and restore operations.

Factcheck: Object Storage for Backup

Let's examine these arguments in more detail to make an informed assessment of both the benefits and challenges of using object storage as a primary backup target. This approach will help us better understand the potential impact on organizational backup strategies.

Simplification

The increasing complexity of IT infrastructures is one of the greatest challenges facing administrators today. Data loss or downtime caused by incorrect configurations often leads to significant financial damage. Therefore, the simpler a system is to configure, the lower the risk of human error.

The ability to configure storage directly within Veeam's familiar user interface significantly simplifies management for many storage systems. Many enterprise-level storage solutions can only be configured by customers with extensive knowledge using command-line interfaces (CLI). In contrast, object storage offers limited and consistent functionality, making it easily interchangeable between systems due to its S3 compatibility. Once configured as an S3-compatible object store—if configuration is necessary at all—the storage solution is immediately usable within Veeam.

Additionally, data distribution across various storage tiers can be managed effortlessly within Veeam, provided that S3 or object storage is fully utilized. This enables regular copying or tiering of full backups to cloud-based or other on-premises object storage locations, a feature that was already available in Veeam even before version 12.



Conclusion

In situations where no user-friendly configuration interface is available, using object storage as a backup target indeed proves significantly easier.

Security

It's now common knowledge that backups must be protected against manipulation and deletion in all circumstances. Almost every cyberattack initially targets backup systems to prevent data recovery following an attack.

Through integrated object locking, backups stored on object storage are immutable from the outset, safeguarding them against unauthorized deletion. In contrast, traditional storage solutions require separate immutability mechanisms built into the storage system itself, such as automatic snapshots protected by independent access permissions over a defined retention period. Not all storage systems offer this functionality.



Conclusion

However, if a storage solution already includes effective and easily configurable immutability methods, object locking provides minimal additional benefits. In such cases, object locking simply represents an alternative way to effectively protect backups against ransomware attacks. In theory, object locking could lead to lower capacity requirements compared to snapshots—more on this later.

Performance

Speed is security. The duration of downtime following a cyberattack typically results in the highest financial losses for an organization. At the same time, the ever-growing amount of data requiring backup makes it increasingly challenging to complete backups within available windows.

Object storage is often promoted as being highly performant. Since scaling storage capacity usually involves adding new storage nodes, performance in terms of processing and data throughput naturally increases as well. Besides raw data throughput, a scale-out architecture also allows easy expansion of connectivity to multiple backup servers. Naturally, a high-speed network infrastructure is essential to achieve this.

The data throughput for Veeam's Direct-to-Object functionality varies depending on the chosen solution and the number of nodes, typically ranging between 1 and 4 GB/sec for active full backups.

However, Veeam also offers a specialized technology called Fast Clone (also known as RefLink) for file-based backups, which significantly accelerates backup and restore processes. Although this technology is primarily used with Windows-based storage solutions, it has recently become available on the Silent Brick system, which is built upon a secure Linux platform. A single Silent Brick Controller Pro with Fast Clone support achieves continuous throughput rates of up to 6 GB/sec. With its 100G Ethernet connectivity, it also ensures ample network bandwidth to support

multiple simultaneous connections.



Conclusion

Object storage in single-node and smaller multi-node configurations cannot compete with modern storage solutions that offer support for Fast Clone or RefLink.

Capacity Requirements

In an ideal world, IT administrators would store their backups on large clusters of flash-based storage nodes, resulting in fast and highly reliable backup storage. However, in reality, available budgets play a crucial role. Particularly with the need for investments in emerging technologies such as AI, expenditures on storage infrastructure are being critically assessed.

The previously mentioned Fast Clone technology significantly reduces the required storage capacity. According to the Veeam Capacity Calculator, this often results in savings of 50-80%. Theoretically, a similar reduction is possible with object storage, as object stores inherently avoid storing identical objects multiple times by referencing them instead. This principle closely resembles that of Fast Clone. However, the actual savings depend heavily on specific configurations within Veeam, particularly the chosen object size.

An object store is most efficient when using the smallest possible object size, as this allows for more frequent referencing of existing identical objects. However, to achieve the high performance levels discussed earlier on moderately scaled on-premises systems, a larger object size must be selected, ultimately leading to increased storage capacity requirements.



Conclusion

To achieve performance levels comparable to modern storage solutions with Fast Clone support, object storage systems must store large objects, which consume disproportionately more storage space. As a result, the required storage capacity increases significantly, leading to higher costs and reduced scalability.

Conclusion

Object Storage: Yes, but...

Object storage offers undeniable advantages. Thanks to standardization and simple protocols, systems can be easily combined and, with direct integration into Veeam, are also straightforward to configure. Additionally, the scale-out architecture allows for virtually unlimited growth.

However, object storage is (still) not suitable for every modern backup scenario. Challenges arise particularly when performance in medium-sized installations and storage capacity—and consequently costs—play a significant role.

Object storage is particularly useful in specific scenarios where performance is less critical, such as an alternative to traditional full backups on tape. With integrated immutability via object locking and a simple setup without physical media handling, this solution is both secure and user-friendly. Additionally, the benefits of Fast Clone do not apply to fully sovereign full backups, which must not contain references. When a physical air gap as the final backup safeguard is not required, data can be effectively offloaded to an object storage solution with immutability.

For an even higher level of security through hardware immutability, solutions with air gap functionality are worth considering. Storage systems such as Silent Bricks combine the advantages of tape (physical air gap and data transport) with those of HDD or flash (random access and reduced mechanical components).





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