
Data Storage – On-premise vs cloud-based solutions



Credit: Agilent

Data storage continues to evolve and size of data is increasing, so organizations are faced with the challenge of deciding on their data storage strategy.

But how do you choose between a on-premise solution or a cloud-based service such as Amazon Web Services (AWS), Microsoft Azure and Google Cloud?

There are advantages and disadvantages for each solution, and these are discussed below. The main factors for consideration are cost, scalability, security, maintenance, and accessibility. For organizations to make informed decisions

about their data storage strategies for the future, an understanding of these factors is essential.

Businesses today are focusing on digital transformation and data storage is a critical aspect of this transformation as it enables companies to remove old paper-based systems. On-premise data storage refers to the practice of hosting and managing data within an organization's physical infrastructure, whereas cloud-based solutions involve storing data on remote servers managed by third-party providers.

When talking about on-premise vs cloud for data storage a lot of questions come to mind. Depending on the type of user, management, IT, etc. the questions that may be asked would be different and they would have different concerns. Some of the questions could be:

- If I store my data in the cloud, what do I need to know about security, privacy, compliance etc?
- What advantages are there to storing my data on-premise compared to the cloud?
- As a lab manager, what type of questions should I be asking of my data storage provider?
- What are the cost implications for on-premise vs cloud storage?

Advantages of On-Premise Data Storage

Security and Control

On-premise data storage is what most organisations currently do or have done in the past. It provides organizations with full control over their data, enabling them to implement and enforce their own security measures. It offers increased protection against external threats and data breaches, making it a favorable choice for highly sensitive or regulated data.

Customisation and Flexibility

On-premise solutions allow organisations to tailor their data storage infrastructure to their specific requirements. This customisation enables businesses to optimise performance, integrate seamlessly with existing systems, and accommodate unique compliance needs.

Low Latency and Performance

With on-premise storage, organisations can achieve low latency and high performance since data is stored and accessed locally, the only limitation being the local network performance. Access to data on-premise using only the local network is especially critical for applications that require real-time data processing or handling large volumes of data.

Disadvantages of On-Premise Data Storage

Upfront costs and maintenance

On-premise data storage requires significant upfront investments in hardware, software, and infrastructure. It is also the responsibility of the organisations, specifically IT departments, for the ongoing maintenance, upgrades and capacity planning which can be costly and time-consuming.

Scalability and Elasticity

As data grows, it is always a challenge for organisations with On-premise storage to scale the infrastructure as needed. Organisations must be able to accurately predict future requirements and invest in additional hardware and resources. This is not always easy with the rapid growth in new techniques and data size. Sudden spikes in demand or unexpected growth can strain the infrastructure, leading to performance issues and operational constraints.

Advantages of Cloud based Data Storage

Cost Efficiency and Elasticity

All cloud-based data storage solutions offer a pay-as-you-go model, so this eliminates the upfront infrastructure costs and can reduce operational expenses. Organisations can also leverage the cloud's elasticity, paying only for the resources that are used, and can scale up and down as and when needed.

Scalability and High Availability

Cloud providers such as AWS and Azure offer virtually unlimited scalability, allowing organisations to effortlessly accommodate data growth. Redundancy and data replication across multiple servers enhance reliability and ensure high



availability of data, minimising the risk of data loss.

Accessibility and Collaboration

Cloud-based storage enables seamless access to data from anywhere, facilitating remote work and collaboration. Multiple users can access and work on the same data concurrently, promoting efficiency and teamwork. While this may also be possible for on-premise data, there would be additional security requirements and network infrastructure (VPN etc.) required to allow access to the on-premise data.

Disadvantages of Cloud based Data Storage

Security and Privacy Concerns

Relying on third-party providers introduces potential security risks, such as data breaches or unauthorised access.

Organisations must thoroughly evaluate the security measures implemented by cloud providers and address any regulatory compliance requirements.

Security and privacy are of the highest priority for all cloud providers and a range of solutions are available for organisations using cloud providers. It is, however, the responsibility of the organisation to ensure that the security and privacy controls are put in place.

Dependency on Internet Connectivity

Cloud-based solutions heavily rely on stable and fast internet connectivity. In cases of internet outages or disruptions, accessing or managing data can become challenging, impacting business operations.

Vendor Lock-In

Adopting cloud-based solutions often means relying on specific vendors and their proprietary technologies. Migrating data from one cloud provider to another can be complex and costly, leading to vendor lock-in and limited flexibility. When organisations make the decision to move to a cloud-based solution, they need to thoroughly research the available options and select a provider who will provide the solutions for the specific needs.

Choosing between on-premise data storage and cloud-based solutions requires careful consideration of various factors. While on-premise storage offers control, security, and low latency, it requires substantial upfront investments and lacks the scalability and flexibility of the cloud. Cloud-based storage provides cost-efficiency, scalability, accessibility, and collaboration, but organisations must address security concerns and potential vendor lock-in. Ultimately, the decision should align with an organisation's unique requirements, compliance needs, and long-term growth strategies.

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Atos to modernise NHS communications infrastructure

Atos has been awarded a five-year contract by The Royal Marsden NHS Foundation Trust to modernise its communications infrastructure by installing new hybrid cloud-based technologies