

2016 Industry Report



Cloud Storage – Rent or Buy?

A 5 Year Total Cost of Ownership Study on the Economics of Cloud Storage

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Introduction

You can hardly discuss modern IT without mentioning the cloud as a possible option for storing infrequently accessed data, also known as cold data. Cloud storage receives a lot of industry buzz due to its low monthly cost and the opportunity to reduce capital expenditures. Organizations using cloud storage are essentially renting storage space for their cold data. They rely on the service provider's security and management tools to preserve and protect the data and to meet the necessary service levels.

As data continues to explode across the digital universe, organizations of all sizes wrestle with the challenge of storing and managing business content. Unstructured data, such as videos, medical records, and the web, now account for 80% of the 15 petabytes (PB) created every day, according to a 2013 IBM study. IT professionals know that they need to move this data off of primary storage and many are looking to the cloud. But, there are several ways to deploy cloud storage, including both public and private clouds. Which cloud architecture is safest, most cost-effective, and best suited for business needs?

StrongBox[®] provides an eye-catching alternative to public cloud storage. StrongBox is a storage solution that integrates storage tiers and technologies to simplify data management and lower storage costs. With StrongBox as the repository, organizations avoid the public cloud and instead own a private cloud for their on-site, off-site, or hybrid storage requirements. StrongBox also provides automated, seamless integration with Fujifilm's Dternity Media Cloud service, which offers an attractive option for off-site protection and disaster recovery as a service.

Instead of moving cold data to a public cloud, it can be moved to StrongBox. StrongBox supports traditional file server interfaces (CIFS/SMB/NFS) and the S3 object interface, enabling users to leverage this network-attached storage (NAS) solution as a private cloud. Customers simply move data from primary storage into StrongBox, where data is always protected. StrongBox stores the information on tape using the open-standard Linear Tape File System (LTFS) format. With intelligent storage management and a host of customizable policies, StrongBox keeps all files readily accessible.

Total Cost of Ownership

This study compares the StrongBox and public cloud storage solutions in two different use cases, both of which can be seen in real-world businesses. The first use case (Growth) starts with 200 terabytes (TB) of data that grows over the course of five years to almost 1 PB (960 TB actual), which is a compound annual growth rate (CAGR) of approximately 48%. This is representative of an organization that is installing its first archive solution and anticipates future data growth in line with estimated industry archive data growth rates.

The second use case (Archive) evaluates a steady-state storage requirement of 3 PB of storage with no annual growth. In this scenario, an organization has a significant amount of cold data resident on existing primary storage and wants to quickly move this data into a more cost-effective archive

system. The amount of data that expires and is deleted from the system is equal to the amount of data added each year.

Methodology

In each case, the private cloud solution consists of the StrongBox appliance, StrongBox V80 tape library with encryption key management, and two LTO-7 tape drives with either one or two copies of tape media. The study includes costs for both one and two tape copies as many organizations require a second tape copy for extra data protection. The cloud storage costs are based on Amazon Glacier™ service and support prices. It does not include the cost for the network, the third-party applications for moving data to the cloud, or the additional related training expenses. The StrongBox costs include acquisition costs for the hardware, software, and media as well as ongoing maintenance, support, and energy.

Cloud storage and support costs are estimated to drop at 11% CAGR based on historical data from 2012 to 2015, and the cost of tape media (cartridges) is projected to decline at 20% CAGR (consistent with historical price declines for LTO media). In the Growth use case, as yearly storage requirements grow, tape media, software licenses, and library expansion units are added to the StrongBox solution. In the case of cloud storage, additional capacity is rented each year.

Cost Effectiveness. The StrongBox solution is far less expensive than cloud storage over the five-year analysis period in each use case. For the 200 TB Growth case with two tape copies, the estimated total cost of the StrongBox private cloud is \$126,400 compared to the cloud storage cost of \$213,300 – a saving of \$86,900, or 43%, over the five-year period. In this scenario, while the private cloud requires \$98,200 in capital expenditures for the hardware, media, and initial license charges, it avoids \$193,900 in cloud storage services and operating expenditures. Figure 1 summarizes these findings.

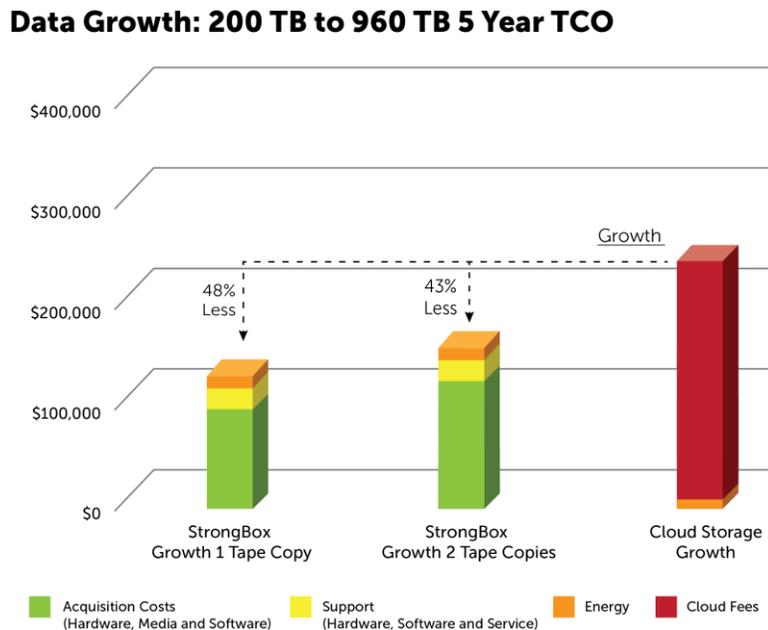


Figure 1

For the 3 PB Archive use case, again with two tape copies, the estimated cost of the StrongBox solution is \$276,700 compared to the cloud storage cost of \$1,143,800 – a five-year savings of over \$867,700, or 76%. In this scenario, while the StrongBox private cloud requires \$242,200 in capital expenditures, it avoids \$1,055,000 in cloud storage services and operating expenditures over the five-year period. Figure 2 summarizes these findings.

Data Archive: 3 PB 5 Year TCO

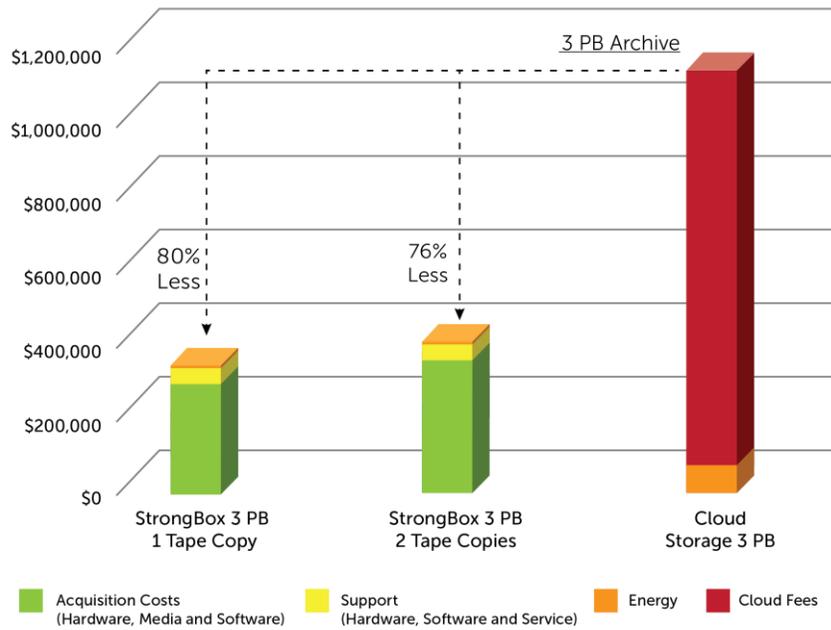


Figure 2

Management Considerations

In addition to cost, there are other important management considerations including: ease of use, security, reliability, speed of data retrieval, and deployment flexibility. The extent to which a storage solution addresses each of these issues improves the speed with which the benefits are realized while also meeting the essential system and organizational requirements for long-term storage.

Ease of Use. Proponents of public cloud storage say it is the easiest way to store data and that adding another on-site resource fosters complexity. The reality is that StrongBox can be installed in as little as an hour and may be easily integrated into an organization’s existing IT infrastructure. StrongBox utilizes interfaces that are familiar to system users and are based on industry standards, minimizing training requirements and easing implementation.

Alternatively, cloud storage uses unique interfaces for storing data. The novel APIs require organizations to acquire new skills, build new interfaces, and integrate them into their current environments. These extra steps are time-consuming and increase the overall soft-dollar costs.

Security. Both solutions provide security features, but StrongBox is readily incorporated into an organization's existing security methods. On the other hand, cloud storage uses a unique set of user access controls and archive policies. As such, cloud storage's security system requires additional investment in new skills and time integrating cloud access controls into an organization's existing security infrastructure.

Reliability. A long-term data repository must be durable. Cloud storage addresses this requirement by creating multiple copies of the data in a single data center. In contrast, StrongBox uses LTO tape for all data storage. Modern tape formulations are a far cry from those available 20 years ago. Today's tape media is expected to last 30 years. In addition, tape storage is significantly more reliable than disk storage today, with error rates of 10^{-19} . This is one error event in every 1.24 exabytes of storage, or about one in every 200,000 LTO-7 cartridges. Multiple tape copies may be created and exported from the system for even greater data protection. Or, companies can send data copies off-site to the Dternity Media Cloud.

Speed of Data Retrieval. Any storage repository must allow for quick, easy data retrieval. Organizations occasionally must retrieve large amounts of information to comply with legal or regulatory requests. StrongBox data is always accessible and presented as a standard file share. With intelligent data management time to first byte is rapid, and large recalls can be scheduled so data is available instantly. On the other hand, public cloud storage solutions require the development of a list of objects to be retrieved using the unique interfaces and a wait of 3-5 hours before the objects are available. Also, with cloud storage solutions, if the volume of data exceeds 5% of the amount stored in a month, additional charges apply, which significantly increases costs.

Flexible Deployment. This study reviewed a single, on-site StrongBox appliance with an optional second tape copy for off-site protection and disaster recovery purposes. StrongBox also supports automated, second-site replication between systems. If the preference is to replicate the local StrongBox data to a public cloud for disaster recovery purposes, Fujifilm provides a cloud storage service, Dternity Media Cloud, which works with StrongBox and is specifically designed for long-term data preservation.

Summary

There is a lot of buzz in the industry about the low cost of public cloud storage, but this analysis demonstrates that a private cloud solution is a lower cost solution. In fact, over five years, the cost of StrongBox can be up to 80% less than a public cloud. While the monthly operating cost of the cloud seems low, it adds up over the course of five years.

The situation is analogous to the decision to lease or purchase a new car. The advertised low monthly lease sounds very appealing, but for most consumers, purchasing a car is the lower cost solution overall. In addition, buying a private cloud leverages an organization's existing skills and infrastructure, speeding time to implementation and quicker realization of the benefits of a low-cost archive. The StrongBox solution also meets the fundamental needs for cold storage: strong security, high reliability, fast data retrieval, and flexible deployment options. StrongBox can be implemented by organizations of all sizes, enabling them to quickly achieve the benefits of moving cold data out of the production environment into a low-cost, secure repository.

Disclosures

This report was sponsored by StrongBox Data Solutions, Inc. (SDS).

Regarding the information used in this report

Brad Johns Consulting L.L.C. believes that the information in this report was accurate as of the date of publication. The data was obtained from publicly available sources and by SDS. However, given the complexity of the offerings, and the rapid changes of technology, it is possible that errors occurred or configurations may have changed. The author does not believe that they would materially change the conclusions. Information is provided "AS IS" without warranty of any kind.

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Brad Johns is the owner and President of Brad Johns Consulting L.L.C. His firm specializes in storage industry analysis and consulting. He started his Information Technology career as a sales trainee in the Data Processing Division of IBM in 1978 and subsequently held a number of sales and sales management positions in the Southwest. He went on to join the IBM Consulting Group and worked with a number of clients in the automotive and aerospace industries. He holds a Master in Business Administration and Bachelor's degree in Economics from the University of Arizona. His experience includes 14 years managing IBM storage marketing and product management in Tucson, Arizona. He can be reached at brad.johns@bradjohnsconsulting.com.

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