



# Cloud Storage Services

A Total Cost of Ownership Comparison

## STORAGE INDUSTRY TRENDS

The amount of digital information organizations are generating and retaining continues to grow unabated. It was not that long ago that a few terabytes of storage in a data center was considered a massive amount. Today organizations store tens, hundreds or thousands of terabytes of data and there is no indication that the growth rate is going to slow. Much of this information must be kept for the long term. This challenges the IT organization; how can service levels be met while meeting regulatory, legal and business needs? How can it be cost effectively stored?

A new solution has emerged to help address these questions; cloud storage. Proponents of cloud storage point to a number of benefits, among them is substantially lower cost than traditional on premise storage. User cost savings accrue by reducing the amount of hardware, software and storage management required. This is made possible through the use of ready-made cloud based storage infrastructure, thereby eliminating many of the storage costs and management tasks required to effectively manage a large and growing amount of information.

## CLOUD STORAGE COMPARISON

We compare the five year cost of a popular cloud storage provider, Amazon Web Services (AWS)<sup>TM</sup> with a new cloud storage service from Fujifilm called the Dternity Media Cloud. Amazon has offered Amazon Simple Storage Services (S3)<sup>TM</sup> for several years, and augments this offering with a lower cost service called Amazon Glacier<sup>TM</sup> that is specifically focused on less active data. The cost for these two offerings is compared to the new Dternity Media Cloud offerings from Fujifilm. There are also two offerings from Fujifilm; Dternity Media Cloud – Active Tier and Dternity Media Cloud – Deep Tier. These offerings are unique in important ways; they incorporate low cost tape as the primary storage medium, store the data using the Linear Tape File System<sup>TM</sup> (LTFS) format and for the active data provide a NAS (CIFS and NFS) interface to the user. In order to provide a functionally equivalent offering using Amazon storage services, it is necessary to incorporate a cloud services layer that provides a NAS interface to the user for the active data. This is achieved by incorporating the average cost of a composite of cloud service offering that provide a NAS interface from the Amazon Marketplace<sup>TM</sup>. For less active data, either the simple Dternity portal or Amazon Glacier interface is utilized. In addition, we have included a mixed on premise, cloud solution using Fujifilm's Media Cloud - Deep Tier Replication integrated with an on premise Dternity NAS appliance.

## TOTAL COST OF OWNERSHIP (TCO)

In order to develop a five year TCO for long term digital data retention it is necessary to include initial costs which are capitalized (CapEx) and periodic costs that are incurred over the course of time (OpEx).

Initial acquisition costs include hardware acquisition, initial software license fees, installation charges, and, in the case of the Dternity services, tape media. Operational costs include cloud storage services, hardware and software support costs, and energy.

Cloud storage avoids many of these costs; initial hardware, software licenses, on-going support, facilities and power and cooling. There is also the reduction of storage management effort, primarily the effort required to operate storage hardware and software. However, there is a new cost; cloud storage services. Cloud storage service cost includes a number of different components; data storage costs (monthly based on GB used), request costs (the number of transaction requests for data to be stored or retrieved from the cloud) and data transfer costs (into and out of the cloud). When comparing cloud storage offerings, we incorporate the costs of these various components of cloud storage cost.

### SAMPLE USE CASE

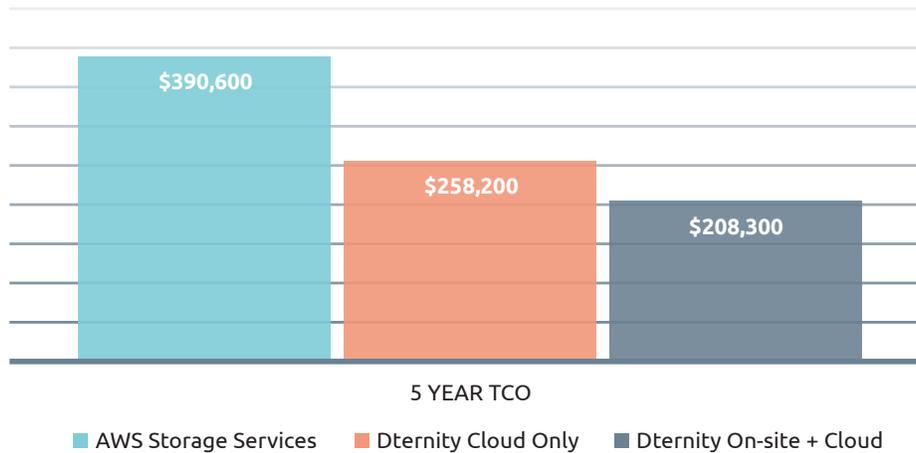
In order to develop a TCO comparison it is necessary to define a representative use case that includes estimates of the amount of data to be stored and its activity level. We start with the amount of data to be stored; 250 TB. Of this data, 20%, or, 50 TB is active data and 80% is inactive. The active data has a 20% likelihood of recall in a given month, resulting in 10TB of data being transferred out each month. The inactive data has a much lower recall rate of 1%, which results in 2 TB of data being retrieved each month.

Given this scenario, we can now estimate the costs of the different cloud storage offerings. For each cloud service provider there is an active tier optimized for rapid retrieval and a second optimized for long term cost savings. For AWS, the active data is stored on a NAS cloud service integrated with S3. The NAS cloud service on AWS provides a standard CIFS/NFS interface to the user, similar to the Dternity Media Cloud's Active Tier. The inactive data is placed on AWS Glacier. For the Dternity Media Cloud solution, the active data is placed on the Dternity Media Cloud – Active Tier and the inactive data placed on the Dternity Media Cloud – Deep Tier. In addition, for the Dternity mixed on premise/cloud storage solution, an on premise Dternity NAS appliance is integrated with a StrongBox V80 Library, tape media for active data and the Dternity Media Cloud – Deep Tier Replication service for inactive data.

### THE RESULT

While Amazon cloud storage services are viewed by industry observers as very cost competitive, the Dternity solutions provide even greater TCO savings. The Dternity cloud solution is 34% less expensive over the five year analysis period for a savings of \$132,400. The Dternity mixed solution was 47% less for a savings of \$182,300.

## 5 Year TCO



Interestingly, counter to prevailing wisdom, the hybrid Dternity solution is the lowest TCO solution over the five year period. Off-setting some of this cost advantage would be the incremental storage management effort required for the on-site portion of the solution. This effort will certainly vary based on customer environments.

### OTHER SOLUTION CONSIDERATIONS

Of course, there are other important information management considerations such as security, data integrity, disaster recovery and availability that must be addressed by cloud storage providers. Both services provide for multiple copies, provide very high levels of availability, and support replication to a secondary location (for an additional cost). A unique aspect of the Dternity solution is that the data is stored on the tape media in the Linear Tape File System format. If an unforeseeable event requires that large quantities of data need to be moved out of the Cloud Data Center in the future, this capability would be very valuable.

### SUMMARY

Cloud storage is an important new solution to assist organizations of all sizes cost-effectively and securely manage data over very long periods of time. It eliminates or reduces many components of the cost of traditional data storage and has been enhanced over the last few years to provide a lower cost offering for less active data while adding more security and availability features. The new Fujifilm Dternity Media Cloud compares very favorably to the established industry leader. It supports standard interfaces that together provide for ease of implementation and operation while providing a robust set of features that provides cost-effective long term storage of digital information.

# Addendum

## DISCLOSURES

This report was sponsored by Fujifilm.

### 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 Fujifilm. 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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