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Article

Storage 101: Evaluating the Benefits among Backup, Tiered Storage & Archiving

by Jim Wheeler

What is the true value in archiving?

Without a comprehensive business case, IT investments are becoming increasingly more difficult to justify to decision makers, especially decision makers that do not understand the technology involved. So the looming question is how do you justify an archive plan? Harvard Business School suggests looking at three metrics:

* Cost Savings
* Risk Reduction
* Process Improvement

Simply put, how will the IT investment in archiving save money, improve the business process, and reduce risk. In general, if your IT process can satisfy at least two of these questions, then it may be worth funding.

Today there are, in general, three data protection business processes competing for IT funding: backup, storage tiering, and archive. This article will compare these three processes in terms of cost savings, process improvement and risk reduction.

How will archiving save money?

Backup: There is little or nothing the backup process will do to save the company money, unless it is faced with a disaster. Event then, the process is likely to be more expensive than the original budget. Backup is like an insurance policy. Companies pay for it, because they know they need to have their data protected from all kinds of data loss issues, ranging from malicious intent to natural disaster and hardware failure. The costs associated with backup include capital appropriation of hardware and software and also include the human intervention process of managing the backup procedure which would include a time component.

Tiered Storage: Storage tiering may temporarily save a company money by delaying capital expenditures on new storage platforms by utilizing disk storage more efficiently and migrating files to more cost-effective, higher-density disk or archive stores as the files age, however, there is still a management issue to be addressed. In addition, as disk storage continues to decrease, an analysis will have to be done to verify that it is in fact cheaper to migrate data rather than continue to throw disk storage at the problem. In addition, for each new disk system used in the solution, a backup strategy must be considered, which will add additional cost to the solution over time, minimizing or eliminating the money savings metric in the analysis.

Archive: Archive also delays capital expenditures on new storage platforms by providing a final resting place for static and aging data which may or may not be part of a tired storage approach. Selection of an archive media type will play an important roll in the cost effective nature of the solution, however, utilization of a removable media type will go a long way in reducing storage costs overall and provide a built-in kind of data protection not available with hard disk. Studies are now starting to come out that show the cost-efficient nature of removable storage both from an energy perspective as well as from a cooling perspective, thus further increasing the value of a good archive strategy. If the archive solution can be combined with long-term data preservation and a disaster recovery component, such as data replication or removable media, then the solution eliminates the backup process thus providing even further value to the enterprise.

How will archiving improve business processes?

Backup: Backups do not improve the business process. In fact it only serves to impede the business process during scheduled backup times. This is why most scheduled backups are done during off-peak hours.

Tiered Storage: Tiered storage and storage resource management, which should go hand-in-hand are the keys to providing the automation of capacity management thus reducing IT labor costs for data management. In order for this kind of tiering to work, the migration engine must either leave a file tag behind or the application needs to be aware of the data migration process and change the file pointers to the new location so that the user's process does not change when the data is moved. If this is done correctly, then the business process can become more efficient in that data will be migrated automatically without user intervention through storage tiers and eventually stored in its final location and/or deleted based on policy management. Effective storage tiering coupled with a good storage resource management model can provide for significant manpower costs savings.

Archive: An application-aware archive can improve worker productivity by providing a central location for all aged data by giving the user one location to look for their data. This kind of central archive serves many process improvements. It provides a single tree for data grooming. Data in the tree can be sliced and diced based on a number of file system metadata criteria, and easily classified if it is in a single file system. It also provides a manageable historical analysis and reporting structure, making it easier to put a value on the data so that it can be mined for future business use.

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How will archiving reduce risk?

Backup: The only criteria that backup really satisfies, is the ability to return to an operational state after a catastrophic outage. Reduced risk is the irreplaceable value of the backup process.

Tiered Storage: Tiered storage management has little or no play in reducing business risk. There is little or no protection of data in a tired storage structure unless duplicate copies are made of the data during the migration process. If duplicate copies are made, than the money savings value shrinks because more hardware must be purchased to store the duplicate files.

Archive: Archive can satisfy a number of risk reduction criteria. One of the biggest risk reductions is the ability to provide a means to comply with regulatory and legal requirements for data retention through policy management. One archive strategy which is widely utilized is "save everything on write-once media". This provides risk in terms of being able to delete potential damaging information, and drives the cost of equipment up, as some businesses require very long retention periods.

The archive process helps to preserve and protect corporate intellectual property. IP is the life blood of most companies whether it is simply customer information or design patents. An archive will preserve this information in a secure environment providing limited access to only those who require access to the data, thus helping to limit corporate espionage and malicious attacks on data.

An archive enables rapid search and retrieval of records as required by discovery laws and rules. This falls lock-step with meeting regulatory retention requirements. If a company has the data but cannot find it, it's the same as having deleted it from an auditor's perspective.

An archive strategy will provide non-repudiation of historical work (e.g., orders, medical images, etc.). Again this plays into regulatory risk reduction.

Archive data on removable media does not need to be protected, as does magnetic disk because drive failures are independent of the media and can be taken off-line and replaced without having to copy, or restore the data. While some users copy data stored on removable media, the copy is generally stored off-site as part of a disaster recovery procedure. The cost to copy media is only the media itself. No additional hardware is required for data growth. Near-line storage libraries are redundant by design and less costly per MB than fixed disk solutions. By limiting redundant copies of data, the amount of storage needed for archives is reduced greatly and helps to drive the cost of archives down. This factor will provide increased savings over time as your archives grow.

What is the Score?

Archive 3, Tiered Storage 2, Backup 1 The archive process is the only IT business process that can satisfy all three of the components of the Harvard Business School plan; cost savings, process improvement, and risk reduction. Archive is not a backup, nor is it hierarchical storage management or tired storage. It can, however, be deployed more effectively as part of an HSM structure or tired storage plan. A good archiving strategy can segregate archival data from primary data, breathing new life into tape backup and other data protection modalities. In identifying the business and operation needs, the roll of archive becomes clearer. The key is setting the proper expectations regarding the needs of the business: data retention and deletion periods, access controls which may include encryption requirements, non-repudiation techniques, deletion methods, logging and auditing methods, media migration and (maybe) container transformation processes.

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