
The Business of Electronic Data Storage

A non-technical guide for executives

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January 2012

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Introduction

Storage and retrieval of electronic data is now an integral and critical part of operations in any modern business, and the volumes that must be handled are growing dramatically and relentlessly. The data retention requirements arising from regulation and compliance are adding further to the challenge. Against this background, if your IT guys have not already requested additional investment in facilities to help store, secure and protect information more efficiently and effectively, then it's only a matter of time. This short primer is designed to provide you with insights that will help you appraise such requests and make decisions on an objective business basis.

Some important basics

Those who are deeply involved with data storage sometimes seem to have a language all of their own, and it can be difficult cutting through the jargon to what really counts. There are many different technology options to consider, but we're not going to go into these here. What matters most from an executive perspective are the issues that need to be considered. Get these straight, and it'll be a lot easier to discuss storage with your IT people, and figure out the rationale for any investment proposal they may have put forward.

The most fundamental aspect to bear in mind is that all data is not equal. There's data which is of critical importance, and your business couldn't run effectively without it, if at all. There's data which needs to be immediately accessible for a while, but once the next update has come along, it's of purely historical interest. And then there's all that mass of data which a business needs to keep – whether it's for business or compliance reasons, or both – but is rarely accessed.

Appreciating the differences between different types of data is the key to defining requirements in a business manner. If all data was treated as 'highly business critical', the technology bill would soon go through the roof. Equally, if all data was treated as non-critical, it would most likely be a lot cheaper, but create serious operational risk for your business. Having a clear view of data diversity ensures that different data sets can be handled appropriately from a storage perspective.

When categorising data sets in this context, here are some of the requirements that businesses commonly consider:

Requirement	Definition	Example techniques
Availability / uptime	Commonly expressed as a percentage, e.g. the dataset concerned must be available 97% of the time. Sometimes, this is turned on its head, which gives the notion of 'downtime', e.g. the business can tolerate the data not being available for 3% of the time (the equivalent of one day a month). How much downtime is acceptable depends on the business impact. The more critical the data is to the operational health of the business, the lower the acceptable level of downtime will be.	If high availability is important, technology and techniques can be used that allow multiple live copies of the data to be maintained on different equipment (sometimes known as 'mirroring'). If a problem occurs at least one copy will always be available, so systems can continue to run without interruption.
Time to recovery	This is all about how long the business can wait before data is back online after it has become unavailable. In effect, we are talking about the maximum outage the business can tolerate before it starts to incur an unacceptable level of disruption or harm. The criticality of the data to ongoing business operations determines what is tolerable.	If it's important to recover quickly following a failure, tools are available to maintain snapshots of data sets that can be rapidly loaded onto alternative storage equipment. 'Hot standbys' are also relevant here, which can be rapidly switched to in the event of failure. Alternative systems provide recoverability at a longer time frame, but usually also at a lower cost point.
Protection from loss	Also often referred to as 'disaster recovery'. This is about the level of confidence you have in being able to recover the data following some kind of catastrophic equipment failure or disruptive event such as a fire, flood, terrorism, data corruption etc.	In simple terms, protecting data from loss is about effective backup and recovery. Minimising the time between backups taken will minimise the amount of data lost in the event of a failure. So-called 'continuous data protection' (CDP) provides the ultimate protection here.
Performance	In most cases, performance relates to the speed or immediacy of access. Let's consider two extremes: Reading and writing product and transaction data required to drive an online web store must be supported by high-performance storage to prevent customer experience problems and loss of business. Conversely retrieving an e-mail received from a customer six months ago to investigate a complaint or query is much less time critical, so performance not a huge issue here.	Different types of storage deliver different levels of performance. High performance typically comes at an increased price, so the trick is to place data on systems in line with the performance requirements of business users. Modern storage systems can sometimes move data automatically as requirements change, e.g. shifting older data to slower devices.

The cost/requirement balancing act

The example techniques described in the table provide some insight into how IT professionals can optimise things in relation to the requirements listed. As a general rule, however, when discussing or reviewing requirements, it is important to remember that optimisation in any of these categories costs money. While it might be tempting to suggest that nothing but the best is good enough for all of the organisation's data, in most cases this approach will be cost prohibitive.

A simple way of matching capability with requirements is to think in terms of bronze, silver and gold standards. Considering the needs of a particular data set in this way enables you to have a productive discussion with the IT department about what is needed in relation to the areas we have been looking at. IT can then translate those high level requirements into technology specifications.

Conversely, IT people can use the same simple scheme to articulate the capability of the options they put forward for consideration. You may still not know – or want to know – the technical detail of what's being proposed. But it makes it easier to assess if a solution is described as meeting 'gold standard', for example. And if the price tag looks too high, you can ask what the cost of the 'silver' level alternative might be, and discuss the implications of that from a compromise perspective.

It of course doesn't matter whether you adopt the gold/silver/bronze terminology or some other scheme to articulate - in business terms - the requirements of storage options around availability, recovery, protection and performance. What's most important is the principle of agreeing a way of matching storage requirements to technology options in a business-like fashion.

Other cost/benefit considerations

It's not just about arriving at the most appropriate storage solution at the optimal price point. Investing in optimised data storage can also bring cost savings, both in the short and long term.

Optimising the use of available capacity

One of the biggest problems with storage in most organisations is that it is fragmented and not very well organised. In other words, each business system typically has one or more storage devices dedicated to it, often with lots of free space, but that space cannot be used by any other system. The net result is that so-called 'storage utilisation rates' are low, which in turn means costs are higher than they need to be.

Fortunately, there's a technology that can address this. Typically referred to as 'storage virtualisation', it works by treating all of the storage available as if it were a single big pool of resource from which space can be allocated flexibly to any business application. As a result, much more of the storage that exists in your organisation can actually be used. This helps to keep storage costs under control.

Another technique for optimising the use of available capacity is to simply reduce the amount of data that you store. When categorising your various data sets, it helps to be clear about which data needs to be kept and for how long. There is of course information that must be retained for either business or regulatory purposes for a certain length of time, but it's surprising how often no one gets around to deleting it when that time is up. It's also quite common to keep everything forever by default because no one has spent the time classifying data and figuring out what can simply be discarded once its immediate purpose has been served.

When data does need to be retained, the trick is to make sure that it is only stored once. The challenge here is particularly acute with office documents such as word processor files, spreadsheets and presentations. Frequently, there are multiple copies of the same file: on the user's local hard drive, on a central file server, and in the inboxes of colleagues. Modern backup and archiving technology can make sure that only one physical copy is stored. Combined with compression techniques, this can dramatically reduce the storage needs for individual user files.

In business terms, reducing the amount of data to be stored, while at the same time increasing the level of storage utilisation means maximum returns are gained from existing investments in storage equipment. And of course less needs to be spent on new storage kit. Minimising the number of storage devices also means lower management overhead for IT, and lower energy and space requirements. This both reduces electricity costs and enhances the environmental stance.

It must be noted, though, that adopting some of these approaches may require the business to change the models it uses to finance solutions, perhaps moving from project or departmental models to more infrastructure or service-centric financing and budgeting strategies.

Responsiveness and ease of access

Modern storage technology, as has already been hinted, can provide much more flexibility, and enables the IT department to deal more rapidly with changing business needs. In many cases, new and changing requirements can be met by simply dipping into existing resources without having to wait for new equipment to be procured, installed and ready for use.

A modern approach to storage also provides a firm foundation for better information access. When it comes to decision making, many business managers are frustrated by the difficulty they have in getting to data they know exists. Too often, the information they need is spread around multiple systems and pulling it all together can be difficult or even impossible. Even when they can extract what they need, it can be very time-consuming to resolve the differences between data sets.

It is beyond the scope of this paper to discuss the business intelligence and analytics tools that allow business people to unlock the value in so-called 'corporate information assets', but suffice it to say that a modern and flexible underlying storage capability greatly enhances what can be

achieved. Conversely, trying to implement business intelligence systems on a fragmented and disjointed storage landscape is akin to attempting to construct a house on a foundation of sand.

Support for new working practices

An area of storage that is evolving very rapidly at the moment is to do with distributed data. As increasing use is made of mobile equipment that may or may not be owned by the organisation, there is a need to facilitate effective and reliable synchronisation of data across multiple devices and locations. This is an area where IT may be requesting additional investment in management tools to be able to handle the cost and risk more effectively. If you are at all interested in providing robust support for new working practices, then this is something you should take very seriously.

The bottom line

It may not occur to you to think about the state of the organisation's storage systems until your IT people come knocking on the door looking for support and funding for improvements. However, electronic information must today be regarded as critical to the business, and hence be stored and managed efficiently and effectively. And as data volumes continue to escalate, the chances are that the systems in place right now are already stressed or will become so in the not too distant future.

With this in mind, the risk of turning a deaf ear to the IT department while they are trying to explain emerging needs is significant. Lack of investment will lead to escalating risk, and is likely to represent false economy anyway. The truth is that spending on improved facilities will prevent operational costs running out of control as existing tools and technology are stretched to the limits. Looked at the other way around, supporting and funding storage related improvements will pay back dividends as a result of helping to unlock value from corporate information assets.

For this to be achieved, it is likely that changes are necessary to the way in which IT systems are funded. In order to optimise resource usage and minimise costs, as well as delivering maximum flexibility, storage systems need to work as shared resources, rather than as standalone systems.

Most importantly, it is essential that business managers work closely with IT to ensure the organisation has storage systems and data management capabilities that address the changing requirements of the business. It is vital that business managers accept 'ownership' for defining the operational requirements that storage systems must meet to ensure that the data created by their departments is properly taken care of. In turn, IT managers need to understand the requirements of their users at ever more detailed levels. Teamwork is certainly the order of the day to formulate storage management policies and procedures that allow the business to function to its optimal degree.

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