

Managing Storage as Part of the Business

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INTRODUCTION

Companies today are very aware of the high costs associated with managing stored data and keeping this data available to business-critical applications. These management costs are escalating at a time when corporate IT organizations are looking to streamline operations to ensure that infrastructure investments are leading to increases in productivity and profitability. At the same time, pressure to manage more infrastructure resources with fewer personnel is at an all time high.

Highly centralized data centers serving the needs of both internal departments and external customers are now regarded as the path to address these problems by centralizing procurement and administration of complex systems. These data centers inherently contain a massive amount of storage, on the order of tens and hundreds of terabytes, and a heterogeneous set of server platforms suited to the needs of each application or department. The one-size-fits-all approach to storage no longer works. Storage requirements now vary by application and even by user within an application. File storage for instance, has different requirements for performance, recoverability and scalability than customer facing web content, internal email, or mission critical database instances. Based upon the relative value to the business, data storage requirements have become very diverse and complex.

This paper will shed light on how to get the most out of your existing storage infrastructure, how to scale storage resources for future growth (cost effectively), and how to build Storage Service Level Management process that is secure, manageable, and reliable enough to support mission-critical applications.

RECOGNIZING THAT THERE IS A PROBLEM

In most companies IT is a standalone department that operates independently of the business practices that make the company profitable. Unfortunately for the bottom line, this exclusion has created an environment in which a 40% return on every dollar spent has become acceptable. Imagine if a manufacturing company adopted the inventory control methods that most IT departments subscribe to for its assembly line. If Manufacturing only used 40% of parts purchased, it would only be a matter of time before the company went out of business. In fact, if this occurred on the assembly line of a publicly traded company and the process of supply chain management was being abused, the situation would be perceived as criminal malfeasance. Someone would certainly get fired and someone might even go to jail.

So why is the lack of business process adherence accepted from IT? Is it due to the cultural differences between technology and business people that generally segregate them into one camp or the other? Granted there no doubt exists an “us and them” attitude between IT and the business side of the house, but I would argue that the cause is the same as any other form of prejudice, ignorance. Without an understanding of each others domain, the business will continue to believe that they’re not getting their moneys worth from IT and IT will continue to see the business as overly demanding and ungrateful.

IDENTIFYING THE PROBLEM

No where is this problem more prevalent within the business and IT relationship than as it relates to storage. With an uncontrolled demand for data from the business and constrained supply from IT there exists the classic supply and demand problem. Left unaddressed, this problem will cause the overall business to face increased information risks which will ultimately have a negative financial impact.

Many of these risks have been publicized recently in the news. Specifically, corporate governance & compliance challenges are on the rise. Without the ability to reproduce a clear audit trail for settlement or revenue accounting, companies are at risk of violations and financial penalties. Additionally, business security & liability risks are increasing due to the need of having multiple copies of consumer data to support Web, call centers and mobile access. With more data touch points, identity theft and inconsistent enforcement of privacy policies has

become a real problem. Finally, in terms of revenue & customer satisfaction, data access bottlenecks can delay information required by the billing department to collect revenue from customers or create a negative experience for the customer trying to access information from the web site.

WHAT IS CAUSING THE PROBLEM - BUSINESS CHALLENGES

To understand the overall problem, business and IT must understand each others challenges and the combined issues they create for the business' bottom line. Since IT exists to support the business, let's examine 3 challenges on the business side of the house first: 1) data proliferation, 2) regulatory & corporate governance risk and 3) diverse and demanding storage requirements.

Data continues to grow at an uncontrolled rate for both unstructured and structured data. Some of the common growth drivers are: email, rich media, intranet/internet, electronic transactions and document management, decision support systems and data warehouses. For many large companies, customer relationships are driven almost exclusively by data. As competition increases, most companies respond by increasing their data intake in order to grow their customer and business intelligence.

At the same time that companies are growing their data for competitive advantage, they're being told that they have to keep more of the data that they generate for corporate governance and compliance. Some of the most recent requirements are Sarbanes Oxley (SOX), SEC 17A-4, Health Insurance Portability and Accountability Act (HIPPA) and Check 21. These laws are requiring companies to store more data, for longer periods of time and in a form that can't be tampered with.

SOX demands a complete cross-referenced index of SEC filers, audit firms, offices, CPAs, services, fees, SEC enforcement actions and other critical disclosure information. As a result, all documents relevant to a company's financial statements are required to be retained for seven years. The burden of proof for this information is upon the enterprise to demonstrate that documents have auditable access and have not been destroyed.

SEC 17A-4 mandates that securities exchange members, brokers and dealers preserve all records relating to the business for a period of not less than 3 years. This includes all financial records, communications, working papers, written agreements and legal documents, just to name a few. The communications requirement alone for email, instant messaging, voicemail, etc., could equate to hundreds of thousands of messages a day that have to be made accessible.

HIPPA was the result of efforts to reform healthcare by encouraging the use of electronic transactions. Security rules require health care providers and insurers to protect patient information and ensure its availability in the event of a disaster. Patient medical records now have to be kept in their original form for two years after a patient's death. A typical hospital generates 50TB-70TB of magnetic resonance imaging and computerized topography data per year. With HIPPA compliance, those hospitals will have to keep that data accessible for decades in many cases.

Check 21 is a federal law that is designed to enable banks to handle more checks electronically. Instead of physically moving paper checks from one bank to another, Check 21 requires banks to process more checks electronically. Banks now have to capture a picture of the front and back of the check along with the associated payment information and store this information electronically.

Finally, the one-size-fits-all approach to storage no longer works. Storage requirements now vary by application and even by user within an application. File storage for instance, has different requirements for performance, recoverability and scalability than customer facing web content, internal email, or mission critical database instances do. Based upon the relative value to the business, data storage requirements have become very diverse and complex.

WHAT IS CAUSING THE PROBLEM - IT CHALLENGES

Understanding IT is critical to understanding business. IT exists solely for the purpose of handling information in support of the business. The original intent of IT was to have a more cost effective and efficient organization dedicated to the storing, retrieving, moving and processing of information. Unfortunately, as a more efficient and cost effective manner of handling information was supplied by IT, the business demand for information increased exponentially. This has created a challenging environment where IT supply is continuously in catch up mode with business demand. Let's examine 3 challenges on the IT side of the house: 1) budgetary constraints, 2) an evolving underlying infrastructure and 3) immature or non-existent service management processes.

Storage costs typically represent anywhere from 10-20% of the company's total IT hardware expenditure. Although the price of storage is decreasing approximately 25% annually, the average company's compounded annual growth rate for data is 55%¹, which leaves an overall net increase in storage spending. Compound this with the related increase in operational costs to manage the additional storage, and IT is left trying to justify to the business why so much money is being spent on storage, when the IT budget is supposed to be flat or declining.

In order to compensate for the increasing net costs of storage, IT has attempted to adopt many of the technologies that promise to make more efficient utilization of storage assets such as: NAS, SAN and iSCSI. Additionally, they have "bought-in" to many of the hardware vendor's strategies that promise to help them decrease storage costs such as: utility storage, tiered storage and ILM. The net affect of chasing cost effective storage for most companies has been that the underlying IT infrastructure has become incredibly complex.

Unaccounted costs and inefficient infrastructures stem from the underlying problem with most IT shops today, that being the lack of a service management focus and business integrated processes. The basic organizational structure for service management processes often exists but the processes are immature or informal, if they exist at all for: demand management, policy definition, capacity management and class of service planning. Critical skills and roles are also missing for service management. The skill sets that do exist are often rich with technology but lacking in terms of service delivery and management capabilities. Finally, the service delivery systems that are in place are typically inadequate. Measuring and monitoring hasn't been defined, automation doesn't exist for repeatable tasks and financial management systems cannot support a chargeback model.

WHAT WILL FIX THE PROBLEM?

Achieving business effectiveness and efficiency in the use of information systems requires that the IT Service delivery of storage be managed as part of the overall business. It's easy to get wrapped up in the daily activities of storage operations and lose sight of the fact that the sole purpose of the storage infrastructure is to support the business' goal of making money. In short, storage technology exists to support core business values and it is IT's responsibility to understand and support the bottom line of the business.

An example of companies that have bridged the gap of understanding between business and IT are the managed service providers. A typical scenario looks like this. The outsourcer comes in and promises to deliver better service than the company is receiving from internal IT for 20% less than the company is currently spending. Since the outsourcer is in business to make a profit, he needs to deliver the contracted services for 20% below what has been quoted; essentially having to deliver services for 40% less than the company is currently spending. So how can an outsourcer deliver IT services for 40% less than current internal costs? With clearly defined processes that link IT to the overall business.

Managed service providers understand how to balance supply and demand by matching the needs of the business with the cost to provide services. This is typically done using Service Level Management (SLM). The purpose of SLM is to establish an objective process that will bridge the differences between the business and IT goals and to arrive at mutually acceptable terms. The process is one of negotiating with the business for services

¹ Storage Spending Plans for 2004 - IDC

that will be provided and marketing the benefits of those services to the business. The goals of SLM are directly associated with the services defined in the outsourcer's business plan so that IT is run as a business.

With this type of comprehensive management model in place, storage can be delivered as a service that incorporates the service provider's best practices. Fortunately, for the average company that hasn't spent years refining their service delivery model with best practices, industry models exist that define best practices such as the Information Technology Infrastructure Library (ITIL). ITIL is intended to assist organizations in developing a process for IT Service Management. ITIL isn't a model in and of itself, but merely a library of books documenting "best practices" in IT Service Management that are grouped together to represent a service model. The areas of IT Service Management that ITIL covers are:

- Configuration Management
- The Service Desk
- Incident Management
- Problem Management
- Change Management
- Release Management
- Service Level Management
- Financial Management for IT Services
- Availability Management
- Security Management
- Capacity Management

SLM built upon a delivery model, such as ITIL, will provide an objective process that helps build trust between IT and the business units and respect for each others challenges as they relate to the overall business.

FIX THE PROBLEM

In order for IT to implement an SLM model for storage, it must first understand the impact that storage related services have on the business by understanding the economic relationships between the business, its units and the IT storage group. The development of a business plan by IT for storage is the first step in establishing common goals for storage between IT and the business. The business plan for the delivery of storage services must be based on the requirements of the business, its units and specific application owners.

With most companies today, the business side of the house hasn't defined what those requirements are and IT is faced with the dilemma of causality. Without an understanding of data requirements from the business units that create and own the data, IT doesn't have the information necessary to establish a business plan for the delivery of storage services. In order to bridge this gap IT needs to produce reports that describe the "as is" state of the storage environment from both an internal infrastructure and support perspective to a business consumption view.

In order to solve a problem you must first understand what you have to work with and a Storage Management tool will be essential to this discovery process. Since Storage Management tools aren't free, the cost of the tool will need to be considered in context to the value that it will provide the business. As with all procurements, enterprises need to align their IT purchases with business objectives. Purchasing a Storage Management product needs to adhere to the same business investment decision criteria as any other investment that impacts the business.

When evaluating Storage Management tools, the best place to start is to look at how the goals of the tool vendors differ from the business. From a basic economic standpoint, if you're trying to achieve reduced capital and operational costs for storage, insure that those benefits are also in the best interest of your tool vendor. For instance, many of the hardware companies offer Storage Management tools that are focused more on the tactical day to day management of storage instead of the strategically focused goal of reducing the amount of storage that their customers purchase. This is because hardware vendors are in business to sell you more storage,

despite some of their marketing claims of late. More often than not, the sole objective of the hardware vendor is to maintain account control by bundling a Storage Management tool that appears to be “good enough” with a frame purchase. Unfortunately, these tools do not enable IT to deliver storage services to the businesses that are measurable, accountable and tightly integrated with business objectives. Neither do they assist IT in making more efficient utilization of storage or reducing the amount of storage that needs to be procured in the future.

Additionally, the days of a pure heterogeneous environment are gone for most companies. From varying requirements among business units to acquisitions, most global enterprises have complex heterogeneous server and storage infrastructures equipped with a broad range of storage platforms and architectures such as direct attached, NAS and SAN storage devices. As a result, they are constantly looking for the best way to report against their heterogeneous IT environments. They also want to eliminate the manual process of aggregating data from disparate point products to understand how storage, backup and recovery and server resources are being utilized by applications, lines of business, geographies and any customized business view required by the user.

At the same time, they need to report against service levels for various applications and business processes. Once again, the right Storage Management tool for the business will be one that enables a strategic focus by supporting the company’s broad range of devices (not just a particular make or model), applications and business processes while providing accountability for both IT services and business unit consumption with SLM. The importance of selecting the right Storage Management tool cannot be overstated since it will provide the technical foundation to establish storage business adherence. Once established, the Storage Management tool will be as important as the storage business processes that it enables.

After a Storage Management tool has been implemented, IT can use the SRM component to analyze file metrics for owner, size, age, frequency of access and the application that created it at the business unit level. From this discovery information, business units can begin to classify their data and the associated storage that’s currently being consumed. This classification will provide IT with the business requirements for future storage service requests based upon the information’s value to the business, compliance and security requirements.

Data classification is an excellent way for IT to reach out to the business units and to get a handle on their data requirements. In most companies, the value of data to the business has not been defined and as a result, most if not all storage requirements are mapped to the “high end” of the scale. This is a common situation in many environments today, where everyone’s data is the most important and requires Tier-1 storage. Data classification will help to eliminate this problem by providing user accountability for high-end storage consumption and also laying the foundation for a cost model. Even a simple model of classifying data as having a “High”, “Medium” or “Low” value to the business will enable IT to align the storage infrastructure with the business value of the company’s data.

Once the value of the data is defined and the storage system is aligned with the data’s value, tiers of storage can be defined as storage service offerings to meet the business requirements for specific data sets. IT can then develop a business plan for storage services that reflects those business requirements. Requirements will need to be aligned by developing a Service Catalog that contains detailed descriptions about IT storage offerings along with default levels and options. The storage services detailed within the Service Catalog will need to be defined in business terms by application (i.e. billing, CRM, data warehouse, email, office automation, etc.), policy (notification/escalation rules, RAID levels, snapshots/mirrors, zoning requirements, etc.) and class of service (availability, compliance/retention, performance, recoverability, security, etc.). This will give the business an overview of all available storage services as they relate to the specific business requirements of each application.

With a business plan and clearly defined storage services in place, the level of service can then be negotiated as an agreement between IT and the business units benefiting from the Storage Management services. A common problem with initially setting service levels and their associated costs is a lack of knowledge, so establishing an initial baseline for service will be key. The more empirical data that can be collected regarding what is required and what is feasible to deliver, the better the baseline will be. While service levels are being negotiated,

consequences for not meeting those levels (typically positive or negative financial incentives) will also need to be agreed upon.

Once Service Level Agreements (SLA's) have been reached, IT will need to use the Storage Management tool to measure and report against performance and to provide it's customers with information regarding their consumption. In order to provide business level reporting, IT will need to display information on capacity, usage, costs and service levels for online storage, data protection, servers and clusters. By maintaining continuous and open dialog with the business units SLA's can be further refined in terms of what actual requirements are and what services have been delivered compared to the initial baseline. Due to the changing nature of the business, these agreements will require periodic review and adjustments to insure that the business requirements are logically mapped to the IT infrastructure.

Achieving business effectiveness and efficiency in the use of information systems requires that the IT Service delivery of storage be managed as part of the overall business. Storage Service Level Management (SSLM) is designed to focus on the people, processes and technology issues that providers of storage services face. SSLM is a top-down, business driven approach to the management of storage that specifically addresses the strategic business value generated by IT and the need to deliver a high quality storage service to the business.

VERIFY THAT THE PROBLEM HAS BEEN FIXED

A large portion of SSLM is assessing the current state of service and making adjustments when deviations are identified in either the level of service provided or the underlying business requirement that the service is mapped to. To assess the current state of service that IT is delivering to the business, reports will need to be generated for both internal and business unit consumption. With reports serving as an initiator for continuous and open dialog, problems can be identified, performance can be measured and an objective accounting of IT's ability to meet the changing needs of the business can be attained.

Additionally, just as business requirements will change over time, so will the relative merits of Storage Management tools. Vendors are releasing new and better tools as technology changes and the requirement for aligning strategic business objectives with business processes is gaining focus. As a result, the value of the selected Storage Management tool will need to be occasionally assessed in order to insure that the tool continues to align with the strategic objectives of the business.

CONCLUSION

IT organizations face a difficult balancing act to ensure market responsiveness while operating efficiently. Companies today are continually seeking new ways to innovate and closely align IT to the changing needs of their business. IT's job is never done when it comes to managing risk, cost and complexity across an enterprise. It takes innovation to drive market strategy and it takes efficiency to drive innovation. In order to unlock innovation, IT organizations must proactively attain greater productivity across existing resources and staff. Decision makers must keep abreast of the latest technologies that can help drive down IT costs and streamline the management of the storage environments in order to drive innovation. It is not until efficiency and innovation are recognized that value can be derived from the IT budget.

In order to survive in today's marketplace, companies must continue to evolve. This continuous change will require that IT have a solid SSLM process in order to support business agility in a cost effective manner. Additionally, IT will require a Storage Management tool with the ability to support that process and to keep both capital and operational costs low.

As with most process changes that provide significant value to an organization, the process of implementing SSLM will be evolutionary and not revolutionary. SSLM will need to occur in stages:

1. **Understand the challenges** - Understand how both the business and IT operate by understanding what they want and need to perform their function well as a part of the overall business.
2. **Implement a Storage Management tool** – The selection of a Storage Management tool should be made based upon a clear understanding of its overall value to the business’ strategic objectives.
3. **Classify data requirements** – The first savings to be realized will come from the proper establishment of the value of data based upon the level of protection, accessibility and storage media required.
4. **Develop a Business Plan** – In order to manage storage as part of the business you’ll need to define a plan to include: mission statement, marketing plan (if you’re selling services), pricing, income statement, balance sheet, etc.
5. **Define tiers of storage and service offerings** – Based upon your data classification all data is not created equal, so match service offerings with business requirements.
6. **Develop a Service Catalog** – Offer a “menu” of services that specifically address the business requirements for data.
7. **Establish SLA’s** – Mutually agree on service delivery for cost of storage and time to provision.
8. **Report and adjust according to findings** – Open communication and occasional tuning will be required to insure that IT maintains alignment with the business strategy.

From a business perspective, the money spent on IT for the management of storage is an investment decision. This is no different than any other investment decision that the business makes. If IT adheres to the same practices as the business side of the house and aligns itself with the business through an SSLM process, IT can transform itself from a cost center into a business enabler.

WHY VERITAS™ COMMANDCENTRAL?

Presenting business-level metrics for services throughout the organization, Veritas CommandCentral is the ideal solution for developing, executing and managing a Storage Service Level Management process. Business and IT users can measure service levels, performance, and resource utilization by department, geography, application or by any other customized view they desire. Users can analyze month to month, quarter to quarter or year-over-year performance and correlate trends between cost and resource utilization metrics. Policy based management ensures that service levels are met by alerting IT organizations to any issues arising before they become critical. For example, if a server has not been backed up over a specified period of time, IT will be notified proactively, so that the necessary adjustments in the environment may be employed.

VERITAS CommandCentral is a comprehensive software solution that seamlessly integrates storage resource management, performance and policy management, provisioning and management capabilities, backup reporting, cost allocation and chargeback and process automation and workflow to ensure the storage infrastructure runs as efficiently as possible. The active management of storage resources drives service level agreements, ensuring optimal performance and availability of business critical applications by managing the entire data path from application to array and everything in between.

CommandCentral provides companies with a hardware independent solution with capabilities that can be applied immediately to service requests for online storage management, backup/recovery and high availability services. CommandCentral provides a complete solution set designed to support centers of competency and serves as a business portal for IT to define infrastructure services, implement consistent and efficient processes for delivering those services, present those services to IT consumers, measure and report on service levels and resource usage, and even charge back to departments or lines of business for services used.

FOR MORE INFORMATION

1. Visit <http://www.veritas.com/commandcentral>
2. Contact your Symantec Sale Representative
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