# TRANSFORMING STORAGE RESOURCE MANAGEMENT FOR MAXIMUM EFFICIENCY AND BUSINESS BENEFIT

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## Table of Contents

## Executive Summary

### Linking Storage Management to IT Service Delivery

Over 50%[i] of a storage management professional's time each year is spent supporting the design, implementation, and provisioning of storage. Meanwhile, data growth continues to spiral out of control with many organizations facing the prediction of over 57% growth in internal cloud data over the next 2 years.[ii] At the same time, storage management pressures are growing with more focus on compliance, new data channels and usages, and the adoption of new disruptive technologies. But, with limited, static, or shrinking budgets, storage consultants and administrators face difficult decisions and challenges ahead.

So how should storage management teams be structured to meet these challenges and can they be delivered in a way which not only increases job satisfaction, but also makes a genuine contribution to the bottom line?

### There Are No "Silver Bullets"

While the method of storage resource management (SRM) could be seen as relatively straightforward—collect usage information, assess design options, provision and monitor storage—the skills required in large heterogeneous and virtualized IT estates are all too often not dissimilar to those of the forensic specialists seen in an episode of CSI.

When you consider that the data being utilized is likely to include internal and external data sources—emails, documents, voice, and images—plus traditional transactional data related to each individual business, it's no wonder that many storage capabilities are still evolving.

This increase in data volumes and source divergence is driving a greater need for end-to-end visibility, predictive analytical reporting, and an ability to align storage-related issues and configurations directly to the business, its processes, and value.

So, how should storage management teams look to improve their effectiveness and agility? Is there a single recipe for success?

A variety of influences such as organizational size, technology evolution, user IT-literacy, downsizing, outsourcing, cost cutting, big data, and cloud computing are combining to produce waves of change to the shape and size of storage teams. Not surprisingly some of these changes are more beneficial than others. This disparity has inevitably prompted the question among IT leaders 'How do I transform storage management resources for maximum efficiency and greatest business benefit?'

**Establishing the right SRM focus**

No two companies are the same and with the advent of cloud and utility based storage services many companies are at a crossroads as to how to best shape their storage management teams, processes, and tools for the future. Storage engineering and delivery functions must become more fluent in not only understanding the business application landscape but should also take into account four critical dimensions:

- Business/application orientation

- Virtualization/Hypervisor focus

- Convergent architecture strategy

- Best of Breed/Business as Usual (BAU) delivered storage management

Understanding how much emphasis the organization is focusing on each of these areas enables the storage management team to align their own set of capabilities within their organization. Getting this wrong or relying too heavily on any one dimension may result in too much disruption or less opportunity for efficiencies to be gained.

This complex blend of factors means that there are several different, yet often equally valid areas where a company could focus. No single 'silver bullet' organizational design or technology footprint will automatically bring enhanced storage management efficiencies across the wider enterprise.

Experience has also shown that the most effective SRM transformation initiatives focus on addressing the underlying complexities that make storage management difficult within their organization. Having a good understanding of the key information flows, stakeholders, and capabilities required provides greater opportunities to harness and deploy appropriate technology touch points. These touch points should be designed to improve service delivery efficiencies and be converted into actionable improvements and outcomes that are desired by the stakeholders.

This article explores an approach to transforming an SRM capability and demonstrates how a strategic focus which considers the wider perspective of strategic IT direction and the remits of IT Service Delivery capabilities can deliver far more scalable efficiencies across the business.

## Design Around Both Technology and Organizational Focus

The need to adapt to constant waves of regulatory change, turbulent market fluctuations, and competitive pressures has never been more urgent for organisations. Business leaders understand that technology is key to meeting these challenges and are increasingly looking to their IT colleagues to help them. To most cost effectively and quickly meet these challenges, IT teams are rapidly embarking on a journey towards a cloud- (internal, external, or both) and utility-based services model. However, transformations from a legacy-based delivery model of storage management to the new operating model based on usage, capabilities and storage service levels is not always smooth sailing.

This situation is made even more complex at a micro level when you look at differences of emphasis that exist between the range of strategic and tactical initiatives and business- and IT-led projects that are in transit at any one time. Storage architects and engineering teams all too often focus on new technologies, procedures, and methods in search of the best ways to make improvements, but there are few things more exasperating to business champions than having to wade through lengthy projects, processes, red tape, and weighty documentation. This cultural mismatch can lead to strained or unproductive relationships between IT and the business and a reduction in benefits realised.

Before embarking on a storage resource management strategy IT architects and storage engineering staff should take time to map out and understand the different storage management approaches being sought by various communities and stakeholder groups within the organisation. This will help them identify the most appropriate direction for the operating model from a technology standpoint and as seen from the perspective of other user communities. The aim of this approach is to establish a technical design blueprint that will gain the most traction.

Experience from previous engagements has shown that improvements can be quickly realised when you look beyond standard techniques such as maturity models and take a closer look at the differences in technology strategy. Once understood, storage management teams can tailor their overall structures and operating model for greater business alignment and understanding, altering their working style and solutions accordingly.

**Looking Beyond IT Maturity Models**

Many storage management and IT organisations and departments rely on Balanced Score Card and Capability Maturity Model (CMM) assessments as a means of gauging success. While a good place to start, these methods can all too often be inwardly focused on internal processes and documentation production. Next-generation storage services will be delivered not to server and network administrators but to the wider business and project leaders. These individuals tend to measure interactions with IT on cost, timescale, and delivery and apply subjective judgements to the 'quality' of both the work and the working relationship.

Given the differences between what is measured and how, it is no wonder organisations often complain about IT not understanding the needs of the business. While meeting the technical requirements of the end users, a utility-based approach to delivering storage via a catalogue where users select only the capacity and service level required may still indicate insufficient consideration and time spent investing in delivering the services in the most appropriate mechanism. There is also a danger that once service levels and key metrics are agreed upon, each party ends up in an established position; the resulting static relationship can easily turn into a power game of consumer versus supplier. The heart of this problem often lies in IT's lack of understanding of the most appropriate way to engage and support the needs of the business.

Business/IT engagements are complex and dynamic, requiring a mix of skills dependent on the type of business change. Furthermore, many organisations find it difficult to strike a balance between delivering strategic projects and enabling technologies alongside that of technology refresh and tactical updates. One mechanism to facilitate this approach is to use a diagnostic tool that determines the most appropriate way that technology orientation and focus should be delivered to different users within an organisation.

EMC's Chuck Hollis in his blog entry titled "How will you manage storage?"[iii] highlights four different approaches to storage management:

1. Business/application orientation

2. Virtualization/Hypervisor focus

3. Convergent architecture based strategy

4. Best of Breed/Business as Usual (BAU) delivered storage management

Each of these approaches is not exclusive and has their own range of merits and pitfalls. One way that can quickly help bring clarity to how best to approach and deliver the latest in storage resource management technology is for decision makers within the storage management function to plot different perspectives and budgets in order to highlight gaps and differences between the current (blue) and desired (red) state of technology focus for storage management within and to those user communities. Figure 1 shows the results of such an analysis.
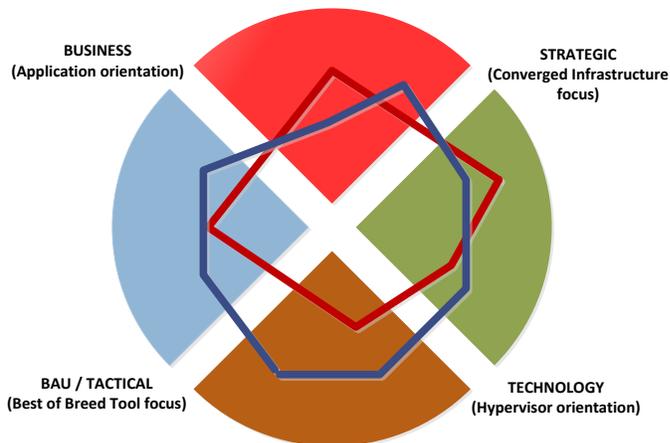
This analysis enables storage management architects to understand how best to deliver resource management technology alongside



**Figure 1: Technology Focus**

projects, key initiatives, and communities to provide the greatest alignment and maximise benefits. Such a review can help provide clarity, build confidence, and ensure that the tools used are aligned most appropriately for the future.

## Be Clear About What Makes Your Situation Complex

Many storage resource management designs have focused on the implementation of technology solutions and combined this with process improvements. This approach can temporarily placate important issues but can also bring about new challenges and thereby fail to deliver the greatest business value in the long term.

Experience has shown that it's often the inability to look across the organisation that can result in a poor adoption of new technology and services. From a storage management perspective, this can result in users being passed from person to person, failure to respond in time, and having to repeatedly provide the same information to different people. In working out where best to focus, I identified six key complexity factors, as show in Figure 2.



**Figure 2: Understanding Complexity**

The model shown is one I've used with financial services clients previously. The products and services dimensions are organisation specific and should be adapted to your own needs. Each of these factors is described in more detail below.

1. **Interactions**: By understanding both internal and external interactions, storage management teams can make significant efficiency improvements that reduce handling times, maximise commonalities and avoid duplication, and increase the use of multiple repetitive tasks.

2. **Environment**: Having the right culture, support, and training can ensure the team quickly resolve common problems and make a significant difference to staff morale and customers satisfaction levels.

3. **Method**: Many IT teams are hampered by their segregated and distributed specialities which encourage an emphasis on only sharing critical information and specific communication. This can make it difficult for service delivery members to gather and understand information efficiently, undertake detailed root cause analysis, and produce savings.

4. **Business Product**: The competitive nature of today's commercial world is driving the desire for new innovations and ever increasing peaks and troughs in application / workload profiles. A key factor in efficient and consistent resolutions will be to have sufficient information and the necessary tools to be able to understand problems from a business / product specific standpoint and drill into specifics.

5. **Measurement**: Tracking and the timely delivery of information is critical to good service level delivery. Understanding the different measurements and their relationship with how end users perceive services is key to improving satisfaction scores and reducing escalations.

6. **Technology**: This should be exploited appropriately to allow users to deploy storage services by any reasonable means and aid users in their requests.

In the example shown in Figure 2, the most complex elements highlighted are:

1. Interactions: Consumer

2. Environment: Industry Regulation

3. Method: Decision Making

4. Business Product: Mobile

5. Measurement: Quality

6. Technology: Legacy

By understanding what makes your own environment complex you will be better placed to deliver technical business transformation within your organization.

## Adopt an approach that focuses on IT Service Management

Having highlighted the technology strategy gaps and gained an understanding of where and how complexity hides, the final step in designing storage resource management for maximum efficiency and greatest business benefit is to start overlaying the results onto a storage resource management capability model. While ITIL and other service management frameworks are great at creating a structure for best practice service delivery and service support, how that translates to actual storage management tasks and capabilities is often unclear.

In working with clients, I have identified 12 key dimensions of storage resource management on which organizations typically want to focus. That's not to say that there aren't other dimensions and that all the dimensions shown don't match your own individual set of requirements. An example is shown in Figure 3 below.



**Figure 3: Storage Resource Management Capabilities**

**Building Dialogue with your Storage Consumers**

When you consider that only a few dissatisfied consumers will complain, there is a large number who just quietly walk away and look to take their requirements elsewhere. Given the ever increasing world of online providers such as Amazon, Google, and Microsoft this is an increasing risk and concern for IT functions within businesses as corporate data could be stored on and in non-certified locations.

Reasons include; it's too difficult or time consuming; they don't believe it will make a difference; it's not clear how to engage. Building dialogue with your customers can be a slow process and requires both rational and emotional engagement and an appreciation of an individual's interests. To achieve an effective storage management strategy for servicing storage requests, you should ensure that every touch point is understood. Channels of communication have proliferated in recent times. While telephone and email are still the preferred method of many business communications, the increase of Internet-based services, mobile devices, and smartphones is driving a change from interactional to transactional communications where self-service and automation come to the fore.

If storage management teams are to successfully engage with their consumers, new and improved technology solutions are needed to support multiple channels, efficiency gains, increased volumes, and value creation. One approach to understanding how best to achieve this need is via the use of a context model. Context models provide a high level summary of the information flows between the consumers and services. As a result they are a solid foundation for understanding what does (and needs to) go on within the business to handle the flow of information both from a process (how) and capability (what) perspective.

In creating a context view, the area of the business (in this case storage management) is treated as a black box that processes data. Users are represented as circles around the edge and grouped where appropriate. Text summaries are included on the information flows to describe them.

A basic context model for the storage management capabilities highlighted previously is shown in Figure 4.
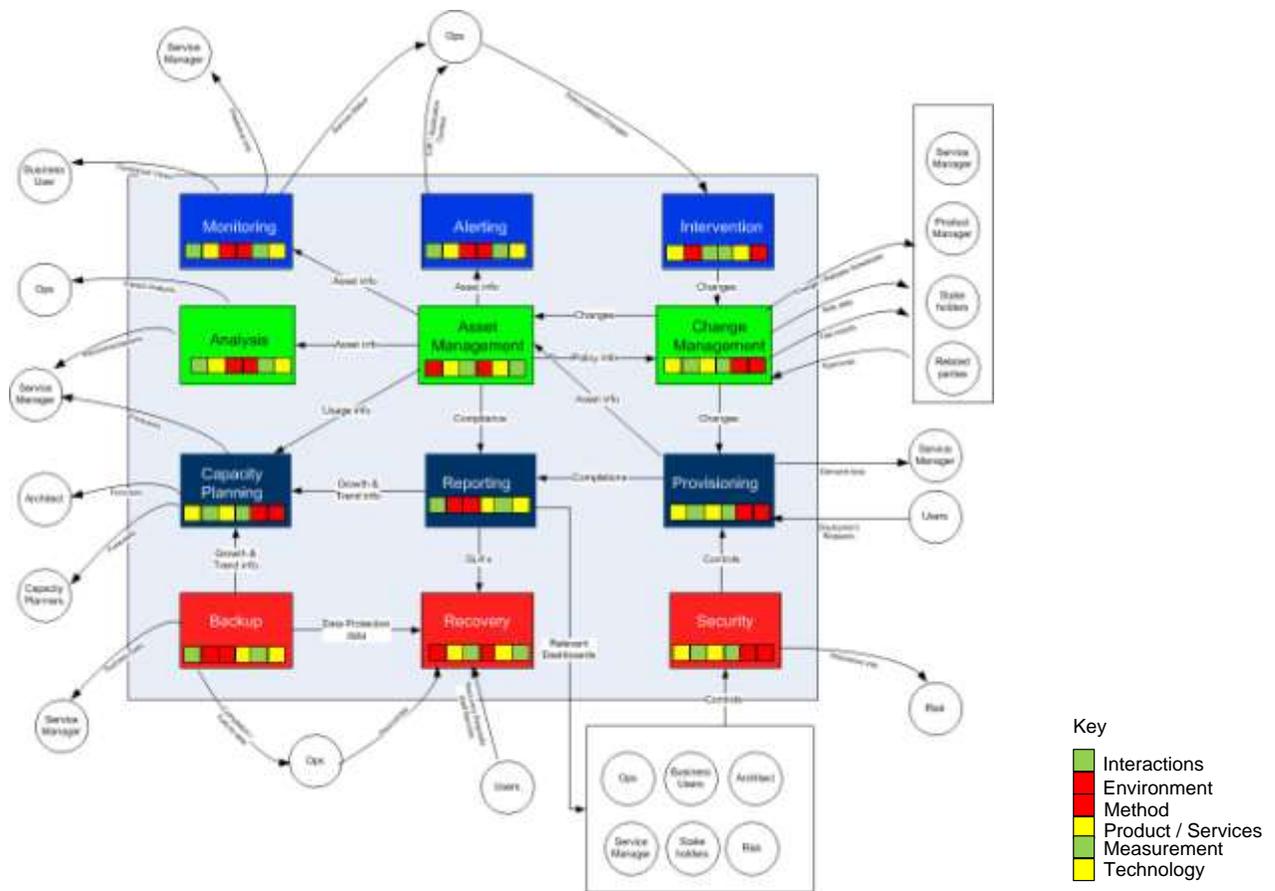
**Figure 4: Storage Resource Management Context Model**

By combining the outputs of your complexity matrix assessments across each of the capabilities as indicated above in the red amber green bars, you can start to build and adopt an approach that is tailored to address your own specific situation. Depending on the shape of your assessment this will drive the overall strategy for transformation of storage resource management.

In the example in Figure 4, monitoring and alerting capabilities need to focus on the method of management in the context of the business products and services, while capacity planning and provisioning should be focused on reducing technical and measurement complexities.

## Conclusion and Recommendations

Delivering and managing storage resources to your consumers in a timely and appropriate mechanism is difficult and consumers are becoming more demanding, vocal and less tolerant of slow and inflexible service models.

No two organisations are the same and there are four key technological directions to choose from when considering the next generation of storage management approach. However, in order to gain traction, organisations must take into account six critical complexity dimensions and overlay these onto their storage management capability framework.

By overlaying the complexity analysis with a context-based storage management capability model, organisations can determine how and where to focus for maximum benefit. This means that several different areas will often need to be improved in different ways. Unfortunately, there is no single 'silver bullet' design that can bring automatic success.

However, when the complexity in these key business factors is fully understood, addressed, and supported with appropriate consumer touch points, a company can economically benefit from the generation of long term productivity gains and lower levels of organisational fracture.

## Author's Biography

Russell is an Advisory Solution Engineer at EMC. He has been in the IT industry for over 22 years and at EMC for the last two. He has a wealth of hands-on experience designing and implementing technology and, over the last 10 years helped large corporations and UK governmental departments determine their IT strategies and transformational agenda. Much of Russell's time is now spent helping his customers determine how best to deploy the latest EMC technologies to enable them to gain maximum benefit from their investments. Russell possesses a degree in Computer & Communication Engineering as well as industry certifications from engagements in the financial services sector.

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[i] Alok Shrivastava, G Somasundaram (Somu),
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[ii] Same Reference as footnote 1
[iii] Chuck Hollis, How Will You Manage Storage, 12 July 2010, http://chucksblog.emc.com/chucks_blog/2010/07/how-will-you-manage-storage.html#more