



Veritas CommandCentral™ by Symantec and the Storage Management Evolution

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Contents

The Challenges of Storage Management4

Conclusion9

The Challenges of Storage Management

One of the most perplexing challenges facing data centers today is that of storage management. The challenge of storage management has increased exponentially as information has become more valuable, computing environments have become more complex, and the cost to manage this growth continues to spiral out of control. IT organizations are struggling to deal with the compounded growth of storage, estimated to be 55 percent for the average company, and the scalability and manageability issues caused by this growth. This growth is forcing IT organizations to look for better alternatives to help with the challenge of managing these vast resources while controlling the associated costs.

In order to bridge the gap between the cost of managing storage and its uncontrolled growth, storage management tool deployments have taken center stage. Unfortunately, many of these deployments have ended in failure. The reasons for these failures are typically due to:

- 1. Expectations that have not been properly set.** Whether the desire is to develop a storage utility or simply to discover all storage assets and be able to accurately report against them, both the IT organization and the storage management vendor need to be in sync. Far too often, storage management vendors sell a vision but fail to clarify what is expected from the customer. The further down the evolutionary path that a customer descends with storage management, the less the solution is based on technology and the more process change-dependent it becomes. Expectations need to be set up-front as to what level of effort will be required to achieve the IT organization's vision.
- 2. The IT organization that doesn't know where it currently resides within the storage management evolution.** A clear understanding of the current situation, from an IT maturity standpoint, is necessary in order for the storage management vendor to determine the steps required to move the customer to the optimal position. By having an objective measuring process, the storage management vendor will determine the customer's position within the IT maturity model and the next steps along that evolutionary path.
- 3. A clearly defined deployment methodology that hasn't been agreed upon.** Once expectations are properly set and the position within the storage management model is determined, a clearly defined deployment methodology needs to be laid out and agreed upon by both the customer and the storage management vendor. A storage management vendor might have the best solution on the market, but without an appropriate project plan—complete with resource requirements—and an implementation strategy, the project will fail.

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The table below depicts the four functional components of storage management and the various stages of maturity as defined by the CommandCentral Storage and CommandCentral Service deployment model.

Core Function	Stage 1	Stage 2	Stage 3	Stage 4
1. Visibility	Zero visibility	Array and fabric visibility	Host-side visibility (DB, VM, FS)	End-to-end visibility
2. Efficiency	Using Visio and Excel tools	Reporting metrics	Configuration management	Capacity planning
3. Operational Integration	Disparate operations	Improved service and availability levels	End-to-end management	Policy-driven provisioning and tiered storage
4. Business Alignment	No link to IT operations	Chargebacks and asset tracking	Synchronize with business processes	Storage utility model and ILM

With its unique deployment methodology, CommandCentral can take a customer from installation to vision with measurable value at each step of the way. Walking through the storage management evolution model, the value provided in each core function is as follows:

- 1. Visibility**—The majority of our customers simply want to understand the storage assets they have and be able to report against those assets. Through CommandCentral discovery, visualization, and reporting capabilities, we can take a customer from no visibility to a full supply chain view within a few days:
 - Stage 1 (assets are unknown)—Before purchasing CommandCentral, most of our customers had zero visibility into their storage infrastructure. After deploying CommandCentral Storage the initial stage begins and customers may now take charge of their storage assets.
 - Stage 2 (array and fabric discovery)—After basic installation, the first step of implementation is to provide visibility into the fabric(s) and arrays. With this visibility, basic physical capacity and utilization reports can be generated for a high-level view of the storage assets.
 - Stage 3 (host-side discovery—database, file system, and volume manager)—Once storage visibility is attained from a physical perspective, a logical view from the host side is presented to reveal unclaimed, unused, and underutilized capacity. With this view, the process of storage reclamation can begin.
 - Stage 4 (application to spindle visibility)—The final stage of the discovery/visualization function is to configure CommandCentral to provide an end-to-end view of storage, thus connecting physical and logical dependencies. This provides the ultimate view into storage so that it can be managed as a supply chain.

- 2. Efficiency**—After all assets are discovered, the next phase is to start achieving efficiencies in utilization processes. CommandCentral automated collection and correlation of data enables customers to move from tracking assets on spreadsheets to a capacity management model with trending and forecasting capabilities.
- Stage 1 (manual process for static information)—Management by spreadsheet is how most customers operate until they purchase a storage management solution. Manual data collection and interpretation are sufficient for small environments, but CommandCentral provides customers with an automated collection and correlation utility that scales to meet enterprise requirements.
 - Stage 2 (real-time infrastructure reporting)—Having a real-time view of storage is key to understanding and evaluating its current state. CommandCentral provides current information on the state of the storage infrastructure so that decisions can be made based upon accurate and timely information.
 - Stage 3 (utilization awareness)—Reporting against storage utilization will provide user accountability for storage consumption and also lay the foundation for a cost model. This level of awareness, provided through reporting to the end consumer, will lead to dramatic improvements in overall capacity utilization.
 - Stage 4 (capacity management)—The final phase of the reporting function is to incorporate the information from CommandCentral into an active capacity management practice. Storage assets can be proactively managed by analyzing how storage is distributed among arrays and other devices; how it is allocated among hosts; how it is being consumed by hosts, volumes, and file systems; how storage is growing for applications and databases; and how it is utilized by users and groups.

3. Operational integration—Proactive monitoring and policy-based management are critical to a secure and stable storage infrastructure. CommandCentral provides granular monitoring capabilities and policy engines to move customers from disparate operations to improved levels of service and availability.

- Stage 1 (disparate operations)—Oftentimes storage assets are managed independently or within silos. The first stage of the operational integration function is to consolidate the management of the entire storage infrastructure. With all array and fabric management done through CommandCentral, operational costs can be significantly reduced and the framework for delivering storage as a service will be in place.
- Stage 2 (end-to-end element monitoring)—Every customer has unique requirements and wants to be able to monitor and report against the metrics that are meaningful to their environment. CommandCentral provides detection and monitoring capabilities for predefined conditions and customizable reporting so that customers can monitor both physical and logical objects and generate the reports that meet their specific needs.
- Stage 3 (supply chain management)—With application to spindle visibility and appropriate alerting mechanisms in place, CommandCentral enables customers to begin proactively managing storage as a supply chain.
- Stage 4 (improved service and availability levels)—With the physical and logical dependencies understood, the final stage of the monitoring/management function will enable IT organizations to improve the storage services that they provide and increase the overall availability of the applications that they support. CommandCentral provides this capability through the collection of metrics and the monitoring of their predefined acceptable values along the storage supply chain.

- 4. Business alignment**—Most large organizations are beginning to realize that IT must be accountable to the same business practices as the rest of the company. Storage technology exists solely to support core business values, and it is the IT organization's responsibility to understand and support the bottom line of the business. CommandCentral delivers a top-down, business-driven approach to the management of storage.
- Stage 1 (no link from IT to business)—The IT organization needs to match the requirements of the business with the cost to provide storage services. This is typically done using service-level agreements (SLAs) that bridge the differences between the business and IT goals to arrive at mutually acceptable terms. Once defined, CommandCentral can help customers manage SLAs and report against their performance.
 - Stage 2 (chargeback and asset tracking)—The best way to achieve accountability for consumption from the business is for IT to implement a chargeback model and track the storage assets by business unit. Even if the chargeback is only notional, it still provides visibility to the business units in terms of their associated costs to the overall business. CommandCentral provides the tools necessary to support a chargeback model and report on storage assets.
 - Stage 3 (business process adherence)—Achieving business effectiveness and efficiency in the use of information systems requires that the IT organization's delivery of storage be managed as part of the overall business. CommandCentral supports frameworks for IT service management such as ITIL and is designed to focus on the technology, people, and processes associated with providing storage as a service to the business.
 - Stage 4 (storage utility model)—Working toward a storage utility—the holy grail of storage management—is the final phase of the business alignment function. It is a lofty goal but achievable if customers are willing to support the time, resources, and process changes required. CommandCentral is capable of supporting this goal, but the final stages are more process change-dependent than solely a storage management solution.

Conclusion

With budgets decreasing, storage requirements increasing, and a continuing shortage of skilled individuals to manage storage infrastructures, the need for better storage management is upon us. The decision to implement a storage management solution, however, isn't one that should be taken lightly. While the rewards can be significant, so too can be the up-front effort required to achieve the vision. Storage management is more than technology; it's also dependent upon how the organization drives the business, manages the information, and uses that information to make better business decisions.

Before embarking on this journey, the organization needs to identify the expected objectives and the level of commitment to achieving the goal. If the organization is only interested in achieving tactical management, perhaps the tools supplied by the hardware vendor are adequate. If, however, the desired result is to enable IT to deliver storage services to the business that are measurable, accountable, and tightly integrated with business objectives, the organization requires a strategically focused solution and a willingness to adopt process change.

As seen by our deployment methodology, CommandCentral Storage and Service are capable of taking an IT organization through the entire evolution and providing value at each step of the way. Are you ready to change the way you manage storage?

About Symantec

Symantec is the world leader in providing solutions to help individuals and enterprises assure the security, availability, and integrity of their information.

Headquartered in Cupertino, Calif., Symantec has operations in more than 40 countries.

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