Symantec Delivers A Solid Foundation

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Management Summary

Years ago, a data center had one computer, one operating system and a few disk and tape drives from the same vendor. This environment was fairly easy to manage. Contrast that environment with today's data center, which regularly adds servers, running different operating systems, and tape and disk drives from several different vendors. Now the problem of managing this heterogeneous environment is exponentially more complex. How fast does this complexity grow? *Exponentially!*

There is an old mathematical puzzle that dramatizes exponential growth. A servant presented his king with a beautiful, hand-made chessboard. The king asked the servant what he would like in return for this beautiful gift. The servant surprised the king by asking for one grain of rice on the first square, two grains of rice on the second square, four grains of rice on the third square, etc. The king readily agreed to this request and thought it was a small price to pay for such a beautiful chessboard. All went well at first. However, the payment reached one million grains of rice on the 21st square and more than a *million million* on the 41st. There was not enough rice in the kingdom, or in the world for the final squares.

This puzzle shows the dramatic effect when the number of items are doubled over time. While most customers are not doubling the number of servers that they support daily, many customers do report that the amount of data that they must manage is doubling, or growing at a faster rate, every year.

Vendors have responded to the need to manage this growing environment by delivering software products that manage different vendors' storage or servers … *to a point*. The phrase "*to a point*" defines today's problem. **We have numerous point solutions that manage one part of the infrastructure but do little to simplify overall data center operations**.

The Complexity of Today's Data Center

Quickly the complexity increases. Consider a local bank that has two small data centers. IT administrators manage twenty servers that run three different operating systems and are connected to two different vendor's disk systems. Eight servers run Oracle financial systems, which are replicated from one local disk array to a second remote array for disaster recovery. Three servers support business administration applications that are backed up to tape every night and the tapes are then shipped to the second data center. Four servers run email systems and use array-based copying services to create periodic copy of email files for quicker recovery. Emails older than one month

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IN THIS ISSUE

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are archived to secondary disk. Two servers run payroll and human resources application, which are backed up nightly to tapes and these tapes are sent offsite to a third party vault. The last three servers run data warehousing applications, which are only backed up weekly. IT administrators at the bank are managing twenty servers, with three different operating systems, and fifteen different products to provision storage and servers, back up and copy data, balance I/Os across data paths, manage volumes and support server clustering. These products are from different vendors. They look and act differently and have different support numbers to call to resolve problems. And, they do not interface with each other.

Growth Adds Complexity

Businesses that are successful do not remain the same size; they grow, acquire other smaller companies, or are acquired by larger companies. When this small local bank was acquired by a larger regional bank, the complexity of the operations increased dramatically. This larger bank, now with 100 servers, 5 operating systems, and 3 different vendor's disk systems, was now managed by *forty-five additional* products.

Administrators and operators from the smaller bank struggled to learn the new products, since they looked and acted differently than the tools that they had been accustomed to using. Six months after the merger of the two banks was completed, the first test of the new disaster recovery plan was scheduled. After a long weekend of testing, many of the applications could not be fully recovered by the end of the weekend. The disaster recovery did not fail because the administrators were inept; the disaster recovery test failed because the environment was so complex that it was difficult to manage with the existing staff and disparate software products.

How Do We Fix This Problem?

The problems experienced by the regional bank pale in comparison to the problems that exist in large heterogeneous data centers today. We need to simply data center operations. Adding more resources, such as more people, money and point products, will not simplify operations. In fact, they add more complexity to the problem. What we need are a unified,

standardized set of tools to manage servers, storage and applications that look and act the same across the entire infrastructure.

Vendors are developing standards that will ease the burden of managing large heterogeneous environments. One example of this effort is the non-profit Storage Networking Industry Association (SNIA), which is open to all storage vendors, channel partners, VARs, and end users. Members of the Storage Management Initiative (SMI) Committee are developing standards that will allow different storage hardware products to communicate with software products in a consistent way. In fact, version 1.0.2 of the standard has been accepted by ANSI as an industry standard.

We support the effects of standards committees, such as SMI, to define consistent interfaces between products. However, these efforts address only one part of the problem. Here, SMI has defined standards for interfacing between storage hardware and software but it does not define *the human interface*. Each software product continues to look and act differently, making it difficult for IT administrators to establish and maintain consistent policies across the data center infrastructure.

Building Data Centers the Right Way

Every data center, no matter how large or small, has four major components to manage - servers, storage, applications, and data. Let's assume that we are building a brand new data center and have an unlimited budget. We would purchase the best storage, servers, and applications that are available. Next, we would label all of the hardware in a standard format so that anyone entering the data center would be able to identify - quickly - what applications were running on each server and which storage devices were attached to each server. Any person entering this new data center easily could determine how the hardware was connected.

A well-run data center requires software to manage the hardware, applications, and data. Again, our budget (and time) is unlimited, so we decide to develop our own software. This well-designed suite of management products would manage servers, storage, applications, and data in a consistent fashion. The software would look and act the same way across all four components, making it easy to use and

easy to establish and maintain policies across the infrastructure.

Building a data center from scratch with unlimited budgets and without any deadlines is not realistic. However, having a unified suite of management products is now a reality.

Symantec's Data Center Foundation

Successful IT vendors no longer try to build everything themselves. When they uncover interesting products from smaller companies, they either partner with those companies, or acquire those companies to enhance their portfolio of products. However, many vendors do not make any attempt to integrate these products into their existing suite of products. The result – we still have the complexity of managing our environment with many different point solutions. Symantec (and Veritas, which it acquired) have acquired numerous companies over the last few years to strengthen its portfolio delivering more products, and more value to their customers. However, each new acquisition means that the new products look and act differently from the existing products. Symantec has worked diligently to integrate these new products into their existing products. And that makes life a lot simpler for their customers.

Symantec has now delivered a significant new release of their data center management products, called *Symantec Data Center Foundation* that adds new functions to existing products, incorporates new products, and provides the same look for all of the products within this foundation.

Symantec Data Center Foundation consists of four suites of products to manage data centers – *Veritas Storage Foundation*, *Veritas Server Foundation*, *Veritas i3 - APM*, and *Veritas NetBackup*. These four platforms form the pillars of a foundation that allow IT to manage servers, applications, storage, and data with one unified set of products. This standardized foundation of products simplifies the task of managing complex data centers. Reducing complexity allows IT to respond quicker to changes in business requirements, reduces errors, and saves time (and money).

Veritas Storage Foundation 5.0

Storage Foundation adds several new programs and enhancements to existing programs.

- *CommandCentral Storage* provides SAN discovery, management, storage provisioning, resource management, and reporting.
- *Storage Foundation* provides volume management, file system, and cluster file system support. *Dynamic Storage Tiering* (DST) migrates data based on established policies without disrupting operations. DST is not restricted to moving information within a single volume, but can move information across multiple volumes as it uniquely supports a multi-volume file system. This allows IT to migrate data to less expensive storage easily, saving money. *Copy services* now include support for *bunker replication*. Information can be simultaneously (synchronously) replicated to one location while being asynchronously replicated to another location over any distance. Now, IT can provide the business with a HA/DR strategy enabling an RPO of zero (no transactions are lost) over any distance. *Dynamic Multi-pathing* (DMP) centralizes the management of multi-pathing software across all servers, a significant benefit for administrators who are responsible for managing multiple servers.
- *Storage Foundation Management Server* is a new web-based centralized management solution that reduces the risk to IT by enabling multi-host management.

Veritas Server Foundation

Server Foundation also consists of several new programs and enhancements to existing programs.

- *Provisioning Manager*, previously named *OpForce*, provides an easy way to define server personalities and quickly provision new servers. IT can quickly configure new servers for development, to support growing demands of applications, or to replace damaged servers.
- *Configuration Manager* discovers servers and applications, maps these dependencies, and tracks all changes to the environment in real time.[1] Configuration Manager allows IT to understand the impact that changes will have on their environment, preventing actions that will result in application outages and performance problems.

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[1] This software was originally developed by Relicore.

- *Cluster Server* provides cluster management services and integrated disaster recovery testing. *Fire Drill* logically moves an application from primary to secondary storage and runs tests to check the availability of the files and network connections. *Fire Drill* also estimates Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO). Disaster recovery plans must be tested regularly. Yet, many IT organizations find this testing disruptive and fail to test on a regular basis. Fire Drill gives IT the needed tool to test disaster recovery procedures in a nondisruptive manner, and continually fine-tune the process to ensure that RTO and RPO objectives will be met when an outage occurs.

Veritas i3 – Application Performance Monitor

i3 monitors application performance and recommends changes to improve application and server performance, which will save time and money.

Veritas NetBackup

NetBackup is the fourth component of Data Center Foundation that includes programs to backup, restore, and protect data.

Symantec Has the Right Foundation

Years ago, some data centers were "all-blue" or "all-red" shops; that is, they bought all of their storage and servers from one vendor. But, today's data center has several different varieties of servers and storage and that trend shows no sign of changing. So, if we won't reduce the varieties of servers and devices that we acquire, then we need a unified set of software products that can manage all of that diverse hardware. Symantec Data Center Foundation provides that unified set of software products.

Symantec Data Center Foundation is one of most significant releases announced by this company in the last few years. This new foundation gives customers an easier way to manage complex environments. Standardized software means less time is required to train staff. Changes are made quicker. Processes are simplified. Fewer mistakes are made. Now, when it is time for that dreaded disaster recovery test, IT administrators will know ahead of time that that the test will be successful. These benefits - reducing mistakes, simplifying processes and reacting quicker to changes - save money.

Standardized management software provides immediate benefits today. However, it also provides the required foundation for data center operations in the future. In the future all server and storage resources can be pooled to optimize all resources. Operations can be automated. Applications can be dynamically migrated to other servers and storage to maximize resources as business requirements change. And, policies can be established and enforced that closely align IT services with the requirements of the business. The future is promising but we cannot get there without starting with a solid foundation, like the one from Symantec.

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About the Author

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