

Future Proof Your Data Center with NetApp V-Series

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January 15, 2010

Technology Insight Series

Evaluator Group

enabling you to make the best storage decisions



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Executive Summary

Business optimization is once again in vogue as companies look for ways to continue delivering the high levels of services their customers have come to expect, while lowering costs. IT departments are receiving increased scrutiny of their budgets for this critical function.

One of the largest components of IT spending is storage, which has been increasing faster than server and datacenter networking spending, and is projected to continue doing so over the next five-year period. Evaluator Group's analysis reveals storage spending has continued to increase as a percentage of total IT spending.

For these reasons, IT managers and CFO's alike are looking for ways to radically improve the efficiency of their IT storage investments. New technologies such as virtualization can help improve storage efficiencies, just as it has improved server utilization. Pragmatic corporate executives and IT staffs are seeking proven solutions that minimize new capital investments.

In this paper, Evaluator Group highlights the critical considerations and demonstrates how to significantly increase service levels and reduce costs – all while delivering proven results to the bottom line.

Today's Business Objectives

Businesses are faced with a dilemma – how to meet ever increasing expectations with reduced capital and operational resources.

Finding innovative ways to solve the challenge of increasing service levels with lower financial resources is possible by leveraging technology prudently. As companies continue to become more dependent upon information technologies, efficiency gains in IT will play a more prominent role in the success of companies. Over the past decade, significant improvements have been made towards increasing the utilization and efficiency of computer processing due to several factors, the most significant of which was the widespread deployment of server virtualization technologies.

Evaluator Group Comment: Successful companies are innovating by leveraging new technologies and business practices in order to meet their customers' needs and their financial goals simultaneously.

However, similar efficiency gains have yet to be achieved with storage. The need to store information is increasing at an exponential rate, driven by several factors. Consumers are now creating and storing information in digital format, while also increasing their demand for content. Simultaneously, businesses are looking to meet consumer demand, while adding new applications and facing an increase in business regulations. As a result, storage demand is outpacing growth in capacity, resulting in storage becoming the largest single cost of IT in many datacenters.

In order to compete in a global market, firms need to provide 24/7 availability, leading to an increased reliance on technology for companies of all sizes.

Cost Effective Technology Refresh

Often, financial valuation places an arbitrary value on equipment without regard to its technical usefulness. As a result, IT equipment is viewed as an asset with a financial value, rather than its true value in delivering information technology. When IT budgets are plentiful, it is acceptable to replace equipment when its financial value is depreciated. However, many companies are rethinking ways to maximize their investments to use existing equipment more effectively, thereby reducing the need for new IT investments.

Evaluator Group Comment: Virtualization allows administrators to adapt to changing requirements, while insulating applications from the impact of changes.

Another factor that has impeded technology refresh cycles is the imperative not to disrupt critical business applications. One technology that is able to meet this goal is storage virtualization, which is uniquely able to unlock the value of older equipment, while also improving the manageability and efficiency in new deployments. In particular, virtualization is able to aggregate access to multiple generations of storage behind a common set of management and data availability services. Using storage virtualization, companies are able to reap the rewards of the newest storage features such as thin provisioning, data de-duplication, automated tiering and other emerging technologies.

Evaluator Group Comment: Storage virtualization unlocks the value of both new and existing equipment, enabling administrators to use new features such as thin provisioning and data de-duplication with existing storage.

Still another benefit of virtualization is the use of consistent storage management and data protection tools, while leveraging existing storage to provide the raw capacity. This moves the intelligence and management from multiple individual devices to a single layer, allowing administrators to interact with storage at a higher, virtual layer.

Tight Budgets Limit Capital Spending

The shift from “Get more for the same price” to one of “Get the same for less” is underway. Consumers began this trend, and more recently, this movement has begun emerging in corporate technology spending. This focus on reducing costs will continue while economic conditions emphasize cost reductions rather than adding new capabilities.

Current conditions have left companies struggling to meet the challenge of delivering non-stop availability, while storage demands are increasing and IT budgets are falling. A transformation is underway in how technology advancements are used, which shifts the dividends away from new capabilities, to lowering cost.

Future Proofing

Companies looking to invest want to ensure that their choices will deliver immediate benefits, while also building a bridge to their longer-term objectives. Choosing flexible IT building blocks that can deliver virtual resources is the first step to ensuring IT investments provide a return on investment.

The terms “Cloud Computing”, “Cloud Storage” and “IT as a Service” have been gaining popularity over the past year, becoming the new over-hyped terms. Savvy IT professionals and business executives understand that market awareness is only the beginning of delivering real functionality and value. The premise of Cloud Computing is that it addresses the business need to transition IT from a capital expense to an operational expense.

Evaluator Group Comment: Organizations can future-proof their IT investments by choosing flexible, virtual systems. As Cloud and ITaaS matures, these technology choices will enable next generation datacenters.

Ultimately, businesses are looking to consume IT as a Service (ITaaS), enabling dynamic service levels and costs that can adapt to changing demand. While cloud storage and ITaaS have yet to mature, some elements of these concepts are available. By selectively implementing new technologies with an eye towards the future, it is possible to achieve immediate ROI gains, while still enabling future build outs of a datacenter able to operate as a service.

A Flexible – Future Proof – Infrastructure

In order to lower costs over time, it is important to future-proof datacenters from the inevitable changes in business and technology choices that are certain to come. Two of the keys to future proofing are virtualization and the use of consistent flexible components as the core of the IT architecture.

Many technology purchases are limited in their use, and are often sold as a point solution to address a specific problem. There is a need to balance solving point problems with the need to deliver a long-term return on investment.

Technology Requirements

While the goals are clear, the technology required to achieve these goals is often unclear, with new trends and product features often drowning out the discussion of how businesses can best meet their requirements.

The crucial ingredients in choosing and implementing a standard IT stack include several key components:

- Virtualization – required for core components, including Networking, Servers and Storage
- Intelligent Data Management – required to manage physical and logical components
- Data Protection – required for all business critical applications
- Application Integration – required to deliver high SLA’s at the application level
- Flexibility – required to adapt to changing needs without changing equipment

The NetApp V-Series

Each item outlined, virtualization, intelligent management, data protection, application integration and multi-protocol access, are important aspects to deliver on the theme “Do more with less.”

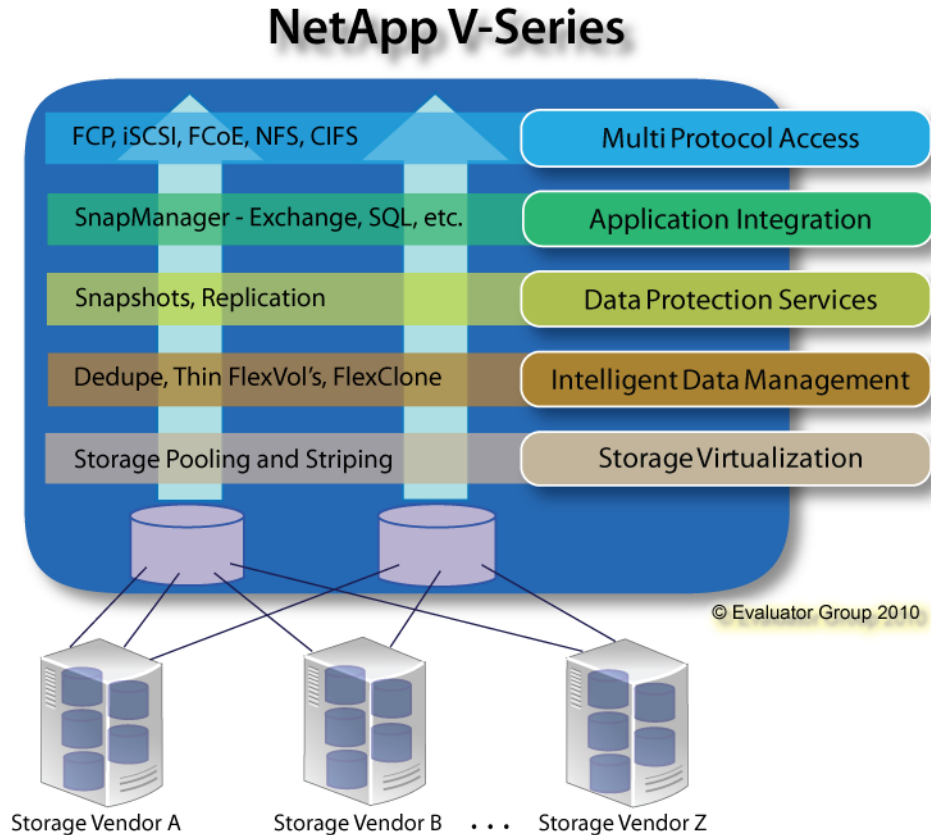


Figure 1: Features of V-Series

Virtualization

Virtualization is one of the most important tools for managing stacks of IT technology in a consistent manner, while providing increased intelligence and control. The concept of virtualization has been around almost since the inception of IT, but has only recently begun to expand its potential throughout the entire IT stack.

Server virtualization has grown rapidly over the past three years, due to the large efficiency improvements seen across many successful deployments. IT users have been able to achieve significant reduction in the number of physical servers, while increasing the utilization of existing equipment. A remaining challenge for many environments is provisioning and managing the storage for these virtual systems.

The ability to transparently migrate data from one virtual system to another has been a challenge for server, networking and storage administrators alike. Administrators evaluating virtualization choices should consider the availability of data protection and service level management tools, along with the management and application integration tools available. Virtualization capabilities are important, along with the ability for virtualized server environments to leverage data protection of storage resources.

Evaluator Group Comment: Storage virtualization, particularly when combined with server virtualization can significantly improve the efficiency of IT environments. NetApp's V-Series, along with Data Motion and integrated VMware and Hyper-V data protection are a natural fit for environments looking to improve their efficiency.

Storage virtualization offers many of these same benefits to storage as server virtualization has delivered to computer systems. Increased utilization through pooling, and the ability to transparently migrate data are all enabled by the use of storage virtualization technology.

Flexibility

Flexibility is a key requirement for infrastructure in today's datacenters. One facet of flexibility is the ability to support multiple physical connection types, and multiple protocols. Older storage technology forced IT departments to choose the connections and protocols they would need at acquisition time. This inflexible approach to IT architecture placed a burden on IT departments and restricted their ability to adapt to the changing business requirements.

These restrictions are most acute in organizations that do not have the ability to purchase new equipment when business applications require additional capacity, or when new application projects arise. Smaller organizations have faced these restrictions, but with the new business imperatives of delivering higher service levels at lower cost, organizations of all sizes are experiencing this challenge.

What makes "unified storage" flexible is the common approach to managing data. By allowing access to data regardless of the protocol, unified storage allows administrators to work with storage without forcing a choice between access protocols or connectivity types. This use of a common set of tools to manage data improves both efficiency and availability.

Storage virtualization coupled with unified storage enables IT departments to manage heterogeneous storage systems in a common, consistent manner, irrespective of the protocols required. This in turn, allows IT staff to devote their time to solving business needs, rather than solving connectivity, protocol or provisioning challenges.

Intelligent Storage Access

One of the downfalls of thin provisioning is that over time, thin volumes grow fat. What is missing is storage intelligence; as a result, storage systems have no knowledge of what data is used, and when it may be removed. Typical storage systems lack this intelligent integration, and over time, thinly provisioned storage becomes less effective as it gains size.

Evaluator Group Comment: Companies that deploy the NetApp V-Series can achieve productivity gains that help to future proof their IT investments. Only intelligent storage virtualization is able to maintain the efficiency gains from thin provisioning and data de-duplication.

Intelligent storage systems integrate the knowledge of data use with virtualization, solving the common problem of data bloat experienced with other systems. This provides administrators with the ability to

maintain thin volumes without requiring additional host based software to scan volumes or other resource consuming tasks.

Application Integration

The importance of application integration cannot be overstated. Without this critical component, IT administrators are left to deal with the complexities of understanding applications' data requirements, how they impact storage, and how to protect and recover this data quickly.

Evaluator Group Comment: Integrating data protection services with applications in a virtual environment is a critical and often overlooked aspect of high service levels. Look for technologies that can manage and protect business critical applications efficiently.

Many applications require specific methods and processes for safeguarding data in an application consistent manner. Without application consistency, data protection points become useless. Often, the coherency of application check points are not tested until an incident has occurred. Even when administrators are able to recover data consistently, the amount of time needed to manually step through intricate processes can add significant time, thereby affecting recovery times and possibly missing critical service levels.

Business Objectives meet Technology

The business imperative faced by IT departments is finding a way to deliver the relentless demand for data at the same or higher levels of service, all with fewer resources. Clearly, this equation cannot work by continuing to purchase and operate IT datacenters as they have been in the past.

Evaluator Group Comment: It is imperative for businesses to rethink how they deliver storage services. Technologies that, improve efficiency, flexibility and service levels can address the primary IT challenges faced by business executives.

For this reason, technologies that address these issues are top of mind for business executives and IT staff alike. Storage technologies that have found traction due to successes include the tiering of storage, data de-duplication, thin provisioning and virtualization. These technologies have found success due to their ability to maximize a company's existing infrastructure, while lowering costs and meeting the requirement for increasing storage capacities and service levels.

Benefits of NetApp V-Series

Simply stated, storage virtualization is the capability to hide the complexities of individual storage components and allow administrators to manage storage at a higher level. Currently, there are limited forms of internal virtualization occurring throughout storage. These internal forms of virtualization are inflexible, and do not provide the seamless, heterogeneous access to pooled storage that true storage virtualization can provide.

These restricted forms of virtualization have been available in disks and storage arrays since their inception; however, they do not address the business needs of customers looking to provide access to a shared global pool of heterogeneous storage.

What is needed is the ability to provision and manage storage without restrictions on the type or brand of storage. By allowing administrators to manage more storage with fewer tools and effort, storage virtualization can increase utilization, while reducing complexity and costs. This definition of storage virtualization is consistent in the industry, despite some misuse of the term.

Evaluator Group Comment: One of the few products that deliver's true storage virtualization is the NetApp V-Series, which provides access to pools of heterogeneous storage; all directed by NetApp provisioning, management and data protection tools.

Immediate ROI Potential

Senior executives and IT staff have different objectives. IT managers and CFO's are seeking an immediate return on their investment and desire pragmatic methods to achieve this goal.

Provided below in Table 1 is listing of some of the tools available from the NetApp V-Series, and how they map to the requirement of improving efficiency, and improving services levels.

NetApp Feature	Improve Service Levels	Improve Efficiency
Snapshot:	Rapid data recovery	Uses a fraction of the space required by a full copy
SnapMirror:	Increased availability	
FlexCache:	Improved performance	
SnapManager: (for Exchange, SQL Server, SharePoint, Oracle, SAP, VMware and Hyper-V)	High application availability	Leverages Snapshot technology for efficient copies of data
MetroCluster:	Improves system availability	
FlexClone:		Able to create space efficient copies for test
Data de-duplication:		Reduces amount of storage
Unified open controller:		Supports storage from multiple vendors
Data Motion:	Able to move data for VM migrations faster	Reduces downtime and improves SLA flexibility
MultiStore:	When used with Data Motion, can improve data access	Transforms a physical storage system into multiple, logical, storage systems

Table 1: Design Requirements to Technology Mapping

Storage administrators are often looking to fix a specific problem, such as:

- Improve backup and/or restore to tape operations not meeting service levels
- Simplify storage management by using consistent tools across storage types
- Reduce storage usage by increasing efficiency

Tools that provide immediate benefits simplify existing processes, without requiring IT administrators or users to change the way they use storage. Tools such as point in time copies (snapshots), thin provisioning and data de-duplication can all provide immediate benefits to users, without changing the way storage is managed or provisioned. Another tool finding widespread use in server virtualization deployments, as well as test and development, is the ability to provide a writeable copy of data.

Delivering High Service Levels

Meeting high service level agreements (or SLA's) encompass many areas. Service levels include price, performance, availability, reliability and a list of other possible agreements. At their core, service levels are business contracts that stipulate a specific quality of service to be delivered and the price for the service.

As a result, service levels are always balanced against the cost of delivering a service. Improving service levels alters the equation, as does lowering costs. Thus, tools that allow IT staff to improve service levels while decreasing costs can dramatically shift the equation to provide significant leverage to IT departments and CFO's alike.

Evaluator Group Comment: It is critical to integrate application intelligence with storage data protection. Only through integration can true application recovery point and recovery time objectives be delivered. NetApp's suite of application SnapManager products helps to automate the process of protecting and restoring application data in a consistent and time effective manner.

As outlined in Table 1, several NetApp data protection products can directly affect service levels and the cost to deliver a SLA. By addressing both aspects, IT managers are able to change the SLA equation and deliver a greater degree of control over the cost required to deliver a service.

High application service levels can only be delivered by tightly integrating data protection with applications. NetApp provides a family of SnapManager products, which provide application availability, including those for Oracle, Exchange, SQL Server, SharePoint and Exchange. By providing tight integration between application consistency and storage, it is possible to deliver high SLA's by meeting stringent Recovery Time and Recovery Point objectives (RTO and RPO).

Future Proof Your Datacenter

IT administrators, architects and managers frequently have multiple objectives beyond solving a near-term issue. IT departments exploring new methodologies are seeking technologies that provide the flexibility to utilize their existing equipment, in new or different ways.

In order to deliver a virtual IT infrastructure, each physical component including servers, storage and networking must be virtualized. There has been a significant emphasis on virtualized server technology,

which has helped to lead the change to virtual infrastructures. However, unless the storage components are virtualized, the promised benefits are difficult to realize.

Evaluator Group Comment: Virtualization is a critical building block for future proofing datacenter designs. Both server and storage virtualization should be implemented in order to see the full benefits.

One critical component is the ability to deliver and manage virtual storage instances that together with virtual networking and server components can reconstitute a virtual IT stack. When applications are able to run wholly in a virtual environment, datacenter managers will be free from physical time, place or scale restrictions.

Summary

Business executives and IT managers looking to cost-effectively improve their current storage infrastructure should consider virtualization technologies. Optimal storage virtualization products will virtualize heterogeneous storage and provide multiple connectivity and protocol options with consistent data protection and storage management tools.

NetApp's V-Series is one of the few product lines available today providing the necessary technology features, together with the ability to deliver proven business results. The V-Series couples NetApp's flexible, unified storage architecture with the ability to manage new storage and repurpose existing storage. By consolidating both older and newer storage capacity behind the V-Series controller, IT departments are able to simplify the management of their storage, while meeting their application and business needs.

Evaluator Group Comment: Companies looking to future proof their storage infrastructure should start with proven, multi-protocol systems that provide storage virtualization capabilities. NetApp's unique unified, storage virtualization and data availability services provide the roadmap for a competitive business advantage.

For companies with an eye on the future, unified, intelligent storage virtualization technologies can be used to update existing infrastructures, while providing a path for a future using Cloud and IT as a Service. Building data and storage services on a flexible, virtualized infrastructure, is the first step on this road.

The future datacenter is a virtual datacenter, and storage is a critical piece to realize the dream.