DataCore Software Corporation Thought Leadership White Paper

SAN Domains Aligning Network-Based Storage Virtualization With Business Needs

"DataCore's SAN Domains begin to change the focus of the conversation from how companies manage their storage to how they manage their enterprise."

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SAN Domains

Aligning Network-Based Storage Virtualization With Business Needs

The dialogue around virtualization is changing. The debate over "When it will it happen" or "If it will happen." are over. Instead the conversation is changing to "What will it look like?" and "How will companies implement it?"

As companies adapt to this strategic shift in how they manage their storage, best practices for implementing virtualization are becoming a focal point. This requires that companies balance the financial benefits of storage consolidations that virtualization enables with the practical challenges that result when one brings together multiple applications with different business and technical requirements.

Examples of how to accomplish this are already found elsewhere in storage networks. Server virtualization software, such as VMware, allows multiple virtual hosts to reside on the same physical server, but only use server resources assigned to specific logical servers. In networks, Fibre Channel switches support VSANs while Ethernet networks offer VLANs with both of these technologies logically segregating network traffic on the same physical network infrastructure. Even some storage array providers support the creation of different logical storage partitions that limit the amount of storage array resources that specific servers can access.

These advances in virtualization on servers, switches and storage arrays leave a gap that network-based storage virtualization needs to close. Like other first generation, SAN technologies, network-based storage virtualization initially focused on the creation of a single, logical pool of storage. However more sophisticated functionality is required to allocate, partition and manage multiple and individual instances of virtual pools and to manage, control and regulate performance and storage services to meet the divergent needs of applications and users within an enterprise.

SAN Regions and Domains

DataCore Software's SANsymphony 6.0 brings the concepts of SAN Regions and SAN Domains into the network-based storage virtualization conversation. A SAN Region allows companies to aggregate new and existing storage resources into one common storage pool while SAN Domains give companies the flexibility to manage and carve up each SAN Region into logical, separate instances that are individually manageable and configurable.

Aggregating all storage into one logical SAN Region may make sense from a purely architectural and financial viewpoint. It is simpler to manage, fewer people are needed to manage it, and it optimizes the use of resources. But it ignores the realities of day-to-day computing. In the storage world as in the real world no two entities are created exactly the same and different methods are needed to manage them. The same rule applies to storage networks. Both production and testing applications may connect to the same storage network and each brings with it a mix of characteristics ranging from mission critical databases with high transaction rates to user file archives to test applications that need frequent configuration changes. This requires companies to treat and manage each application differently even though they are in the same physical infrastructure.

The SAN Domain feature that is part of SANsymphony 6.0 allows companies to address these specific application management requirements. For instance, administrators can create multiple SAN Domains each with their own characteristics such as what resources each SAN Domain can consume by assigning specific bandwidth levels, storage controller resources and storage capacities to each SAN Domain.

Once defined, applications are then assigned to a SAN Domain that most closely matches its availability, management, performance and storage capacity requirements. This technique ensures that mission critical, production applications receive the resources that they need when they need them, even when lower priority applications may be experiencing spikes in performance or testing applications may require configuration changes. When finite storage system resources are being requested simultaneously by various types of application loads, domains insure that critical applications and systems get their fair share first based on assigned priority levels.

Respecting Corporate Boundaries

An intangible benefit that SAN Domains also offer is identifying and preserving the allocation of storage resources owned by specific business units. It is easy for storage consolidations to fail because of disagreements and misunderstandings that ensue over how resources are ultimately configured and managed when put into one indistinguishable storage pool. This is especially acute in circumstances where departments who previously managed their storage resources are forced to share resources with other departments despite philosophical disagreements on how storage should best be managed.

SAN Domains resolve some of these conflicts by allowing specific business units to retain management of the storage resources they previously owned and managed. Companies can create SAN Domains that only contain that business unit's storage resources and then assign that business unit's servers or applications to that SAN Domain. This allows the business unit's current administrators to continue to perform end-to-end management from the application server to the storage with the same security privileges and levels of freedom to which they were accustomed without impacting other server or storage applications in the newly consolidated environment.

SAN Domains also respect and preserve the stability of the underlying storage associated with each department's or business unit's applications. During consolidations that occur without SAN Domains, companies can easily disregard the safeguards that the respective units created prior to the consolidation as it only takes the mismanagement of one 2nd tier application to affect the performance or stability of another business unit's mission critical, revenue generating application.

Common Enterprise Storage Console

While individual SANsymphony's SAN Domains are managed separately, they still deliver a common enterprise console for managing storage. SAN Domains give enterprises contemplating consolidations a viable argument to present to their individual business units to join the corporate consolidation initiative, since they permit business units to maintain some semblance of individuality while allowing companies to realize many of the benefits of storage consolidation.

From an operational standpoint, the respective business units see no difference in how their applications and storage are managed; their administrators can continue to manage their applications, servers and storage using the same rules as before.

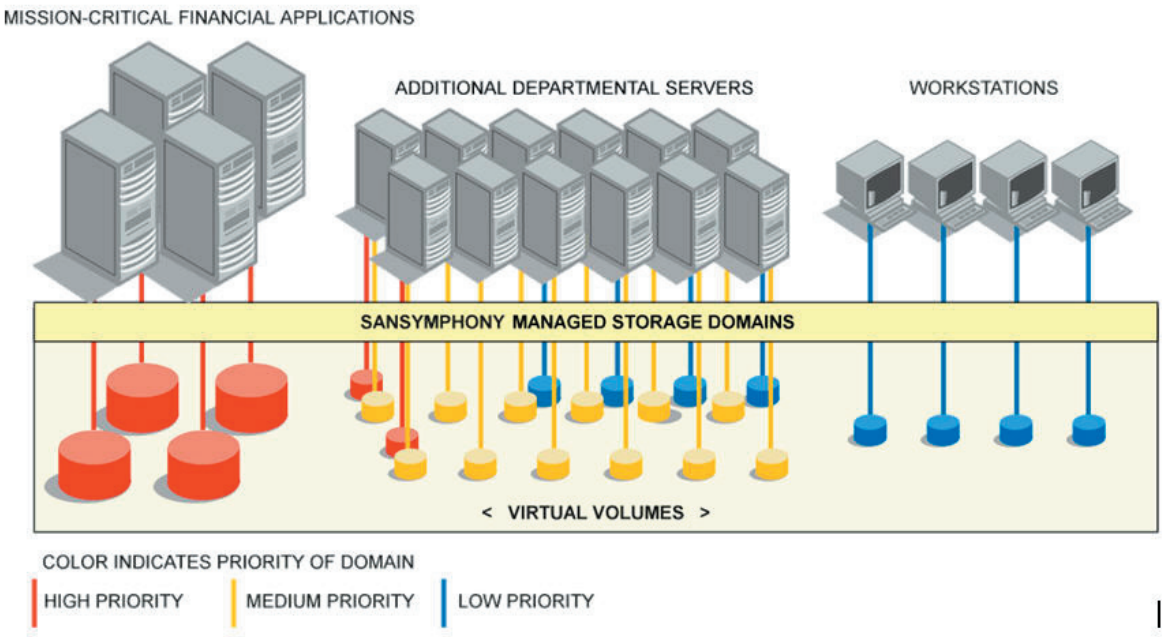
But from an enterprise standpoint, companies can now gain more insight into how well each business unit's storage assets are managed, deliver a higher level of data protection for each business unit's application and establish a common way to manage storage across the enterprise.

Establishing a common storage skill set across the organization benefits companies in three primary ways. One, it allows companies to learn a common way to manage storage regardless of the storage on which platform the data resides. Even though data and storage may be kept logically separate by the SAN Domains, the storage management skills learned on one SAN Domain are transferable into other SAN Domains. Second, policies that control the placement and movement of data are also re-useable and transferable. Again, each SAN Domain may have specific rules that business units want to set, but administrators may copy and adjust those rules for specific SAN Domains without the need to re-invent the wheel. Finally, when storage administrators can spend less time learning the specifics of each storage array interface, they can become more proficient at managing storage and providing higher levels of data protection for the application by placing data on the tier of storage best suited for the application.

SAN Domains and Next Generation Virtualization

Smart companies recognize that they need to consolidate and virtualize their storage infrastructure, but they also do not want to put their mission critical, revenue generating applications at risk in the process. By allowing companies to both consolidate storage and segregate applications with different availability, performance and storage requirements, DataCore Software's SANsymphony 6.0 gives companies the ability to satisfy the concerns raised by both the business and technical sides of the house.

Flexible SAN Domains match resources to organizational needs
SAN Domains: Intelligent Virtual SANs within the physical SAN that regulate, manage and control resource, performance, and quality of service (QOS) levels.



DataCore Software's SANsymphony 6.0's inclusion of SAN Domains into its architecture takes network-based storage virtualization to a new level in providing users with greater control to regulate service levels and manage their performance and resource usage. This capability now puts network-based storage virtualization on par with the state of the art advances seen in LAN and server based virtualization technologies. By allowing companies to create SAN Domains in their virtualized storage infrastructures, SANsymphony delivers the virtualized, consolidated storage infrastructure that companies want and the appropriate levels of control and flexibility that they need to operate successfully in today's corporate computing infrastructure.