Virtualized Storage Management Suite

SGI® LiveSAN™–Storage Virtualization Suite

With its innovative, “Split-Path” architecture, LiveSAN provides centrally managed storage pooling and virtual volume allocations for the entire SAN.

HIGHLIGHTS

Split-Path Architecture

Centralized SAN Management

Thin Provisioning of Virtual Volumes

Platform for Advanced Data Management Applications

SAN Security

Policy-Based

Reduced TCO

Extremely Scalable

High Performance

Highly Available

Product Description

Storage Virtualization is the technology that separates the logical representation of storage from the actual physical storage components. This delivers the true benefits expected from Storage Area Networks (SAN).

With its innovative, “Split-Path” architecture, LiveSAN provides centrally managed storage pooling and virtual volume allocations for the entire SAN. LiveSAN enables independent scalability, top performance, and high availability of all SAN resources. It brings substantial improvements to managing enterprise-class storage networks, reducing administration costs and improving utilization of expensive storage resources. LiveSAN also enables the implementation of advanced disaster recovery and back up applications.

LiveSAN operates in a heterogeneous SAN environment, which can include servers and storage devices from various vendors. Storage can be flexibly allocated to the servers and value-added storage applications using LiveSAN. Managed via a web-based GUI, storage can be organized into stripe sets, storage pools, and then selectively allocated to one or more servers. The LiveSAN appliance is connected to a Fibre Channel loop or switched fabric, and is capable of monitoring the status of physical devices connected to the SAN. LiveSAN manages storage using split-path architecture, serving the volume maps to distributed virtualization agents running on a Data Path module appliance that performs the mapping with wire-speed. This design enables full utilization of SAN performance and provides superior scalability and reliability. LiveSAN is a key enabler for advanced disaster recovery strategies and other enterprise storage applications, implemented above the virtualization layer.

Principles of Operation

LiveSAN provides a central point of storage management across the entire SAN without imposing a performance penalty.

By separating the control path and the handling of metadata from the data path, LiveSAN provides centrally managed mapping and other SAN functions while maintaining the distributed nature of servers, Data Path Module and storage devices. This architecture enables the full bandwidth of the SAN fabric to be utilized.

The Data Path Module retrieves the volume information from the LiveSAN appliance and routes IO from the servers directly to the physical storage devices for read/write operations.

SAN monitoring and operation can be performed by administrators via LiveSAN’s web-based GUI. This monitoring may be integrated with policy based storage management software on various servers in the SAN via Storage Virtualization Manager’s SAN Application Programming Interface (API) and Command Line Interface (CLI).

Architecture

- Single or active-passive stand-alone LiveSAN server(s), connected to one or two SAN fabrics
- Servers are connected to the SAN with industry standard HBAs, using standard, vendor-supplied HBA drivers
- Data Path Module(s) are connected to the SAN
- Failover drivers in each server supporting fail-over and load balancing across multiple HBAs
- Supports a wide variety of storage arrays
- Web-enabled management

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Key Benefits

SAN Management

LiveSAN provides a central point of management for all enterprise SAN resources. The Web-enabled, intuitive GUI is accessible through a standard web browser.

Reduced TCO

Central point of management, efficient usage of storage resources, ability to purchase the most cost effective storage device when needed, reduced load on storage administrator personnel — all contribute to a significant reduction in Total Cost of Ownership of the enterprise storage system.

SAN Scalability

The split-path design of LiveSAN enables virtually limitless independent growth in terms of number of servers, Data Path Modules, storage capacity, IO performance and bandwidth.

High Performance

With LiveSAN , data is transferred between servers and storage resources, through “wire speed” Data Path Modules. Striping across RAID arrays further increases total storage performance, and is especially effective in providing cost-effective video solutions.

High Availability

Complete redundancy is supported by LiveSAN . Modifications to system configuration (e.g., add or delete servers or storage resources; create or reallocate volumes) are done on the fly without system re-boot. LiveSAN Agent on each server supports multiple paths with automatic fail-over.

Storage Applications

LiveSAN provides a platform for advanced enterprise recovery, back-up and other SAN-aware storage applications.

Improved Storage Utilization

LiveSAN can dramatically improve storage utilization. The improvements are done at the volume level where thin provisioned volumes allocate just the amount of storage actually needed by the application. This also applies to the array level where sharing storage from several arrays makes it no longer necessary to keep spare on each array.

SAN Security

Servers are zoned only with the Data Path Modules and have no direct access to the storage. Additionally only volumes that are explicitly allocated to servers are accessible by them through the Data Path Modules.

LiveSAN also includes profile based application to manage storage administrator, ensuring that each administrator can operate according to his assigned privileges only.

Policy Based Infrastructure-Ready

LiveSAN enables third-party applications to automate storage pooling, volume management, and backup procedures using the SVM SAN API and CLI.

Features

Storage Pooling

LiveSAN enables the allocation of virtual volumes from any SAN storage device to any server. Volumes can be expanded over various different mixed breed storage devices. The utilization of storage resources can be maximized with storage pooling. The creation of several pools according to site-defined Quality of Service (QoS) criteria allows uniform allocation of storage with necessary characteristics to application needs.

Striping

Striping a volume over several devices can substantially increase performance, especially with large stripe sizes, a megabyte or more, that match application IO sizes.

Virtual Volume Management

Volumes are created from storage pools and stripe sets. Each volume can be allocated to one or more servers and is not accessible to all others.

When a volume needs to be expanded, more capacity can be added “on the fly” from one of the storage pools. Creating, expanding or deleting a volume does not require a server reboot.

Thin Provisioning Volumes

LiveSAN allows volumes to be thinly provisioned. Such volumes are seen by the operating system and the application according to their virtual size, while allocating storage only for the blocks that are actually used by the application. Thin provisioned volumes prevent over allocation of storage as well as downtime during volumes expansions.

Centralized Storage Management

LiveSAN provides a central point for managing all storage devices connected to the SAN.

Seamless Integration into Existing SAN

LiveSAN can be easily integrated into an existing SAN. It will not affect user’s data and the administrator can select which of the physical devices will be managed via LiveSAN , gradually migrating legacy SANs to a fully virtualized environment, without copying the data.

Booting from the SAN

LiveSAN enables servers to boot from virtual volumes presented by the Storage Virtualization Manager.

Scripting and API

LiveSAN provides SAN API and CLI, while enabling administrators to automate procedures. Users can write scripts for third-party applications while accessing LiveSAN functionality via its API.

Interoperability and Sharing

Volumes can be allocated to multiple servers, enabling storage sharing for cluster management software, SAN file systems, and shared database managers. Volumes can be reassigned from server to server, without copying the data.

Data Management Applications

The LiveSAN storage virtualization suite includes top class data management applications:
- multiView for low capacity snapshots
- multiCopy for full size replications
- multiMigrate for online data migration
- multiMirror for synchronous and asynchronous, local and remote mirror

Platforms Supported

- Microsoft Windows 2003, 2008
- UNIX — Sun Solaris, HP-UX, IBM AIX
- Linux
- Novell Netware
- Irix

Corporate Office
46600 Landing Parkway
Fremont, CA 94538
tel 510.933.8300
fax 408.321.0293
www.sgi.com

North America +1 800.800.7441
Latin America +55 11.5185.2860
Europe +44 118.912.7500
Japan +81 3.5488.1811
Asia Pacific +61 2.9448.1463