



Using CloudArray® with SANsymphony™-V

Adding a Secure Offsite Storage Tier to your Virtualized Storage Environment

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Solution Overview

The business case for storage virtualization software isn't new. System administrators have always wanted best of breed data storage from a choice of vendors with a centralized management framework. With a broad variety of data storage options available today ranging from high-performance SSD to low-cost SATA arrays, they also demand a seamless way to automatically tier their existing storage to maximize utilization and cost-efficiency. Finally, there are numerous benefits to an enterprise-class software stack that includes data replication and disaster recovery in a footprint that persists across storage system upgrades, without the need to ever change data management interfaces and policies.

DataCore SANsymphony-V comes from a pioneer in the storage virtualization segment and is the industry's first storage hypervisor that provides all of the above benefits and more. When used with the TwinStrata CloudArray cloud storage gateway, all of the great flexibility of storage virtualization can be extended to a broad selection of cloud storage from public and private cloud providers. Use cases for the integrated SANsymphony-V – CloudArray solution include:

Virtualized Multi-Tier Storage Leveraging the Cloud

The product combination provides the easiest path for offloading data from expensive on-premise arrays to the cloud and eliminates the need to orchestrate cumbersome or disruptive migrations of existing data. You can take advantage of cloud storage immediately and transparently to existing applications.

Offsite Backup in the Cloud for Virtualized Storage Environments

In addition, with cloud as part of a storage virtualization strategy, there is no longer a need to deploy dedicated off-site infrastructure to move data backups off-premise for disaster recovery. Petabytes of thin-provisioned cloud storage are just a button-push away, all with CloudArray enterprise-class features, such as dynamic caching, data reduction, at-rest local key encryption and bandwidth optimization. Augmenting or replacing an off-site tape strategy is simpler than ever.

High Availability Across Multiple Cloud Storage Providers

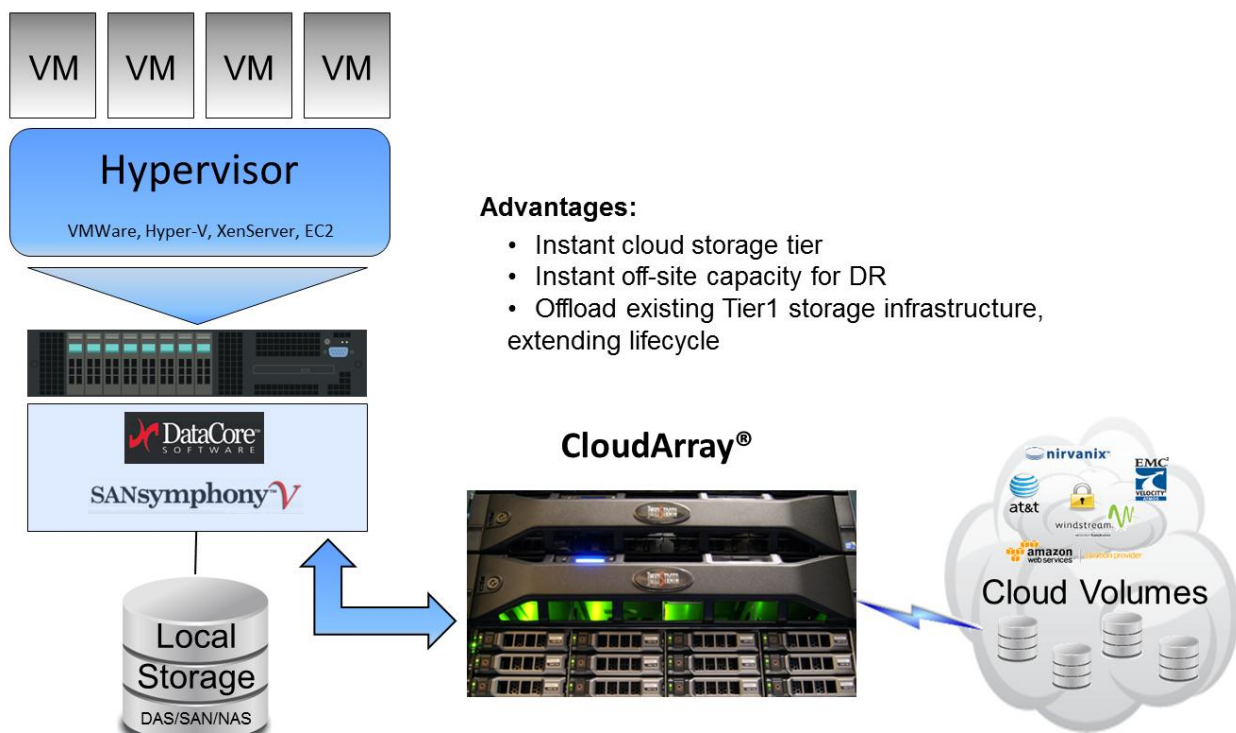
As a side benefit, the compelling features of storage virtualization on local storage now apply across multiple cloud storage providers. Concerned about cloud reliability? Just select RAID or mirroring across a choice of cloud storage providers and increase reliability dramatically. You can also virtualize cloud storage along with existing local storage. Want to replicate data in an existing storage array to the cloud? It's simple—no data to migrate, no APIs, no vendor lock-in and the best choice of cloud providers.

"A cloud-enabled virtualized storage environment gives companies greater control over storage performance and helps control costs by making it easy to tier their storage across the absolute widest range of resources, from high-performance SSD arrays and legacy disk arrays, to scalable, cost-effective cloud storage."

- Terri McClure, Enterprise Strategy Group

Features of the Combined Solution:

- Local read/write performance and access for secure, offsite cloud storage
- Additional storage provided using a utility “Storage as a Service” model
- Makes business continuity and disaster recovery practical for virtual servers, virtual desktops and general IT consolidation
- Eliminates storage-related disruptions due to inevitable maintenance, reconfiguration, upgrades, expansion and failures
- Speeds up application performance by removing disk I/O bottlenecks
- Maximizes use of available disk capacity
- Centralizes and automates storage administration despite variations in equipment



Advantages:

- Instant cloud storage tier
- Instant off-site capacity for DR
- Offload existing Tier1 storage infrastructure, extending lifecycle

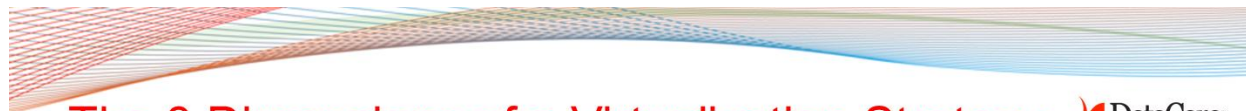
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Diagram 1 – Conceptual Overview of an integrated DataCore /CloudArray solution.

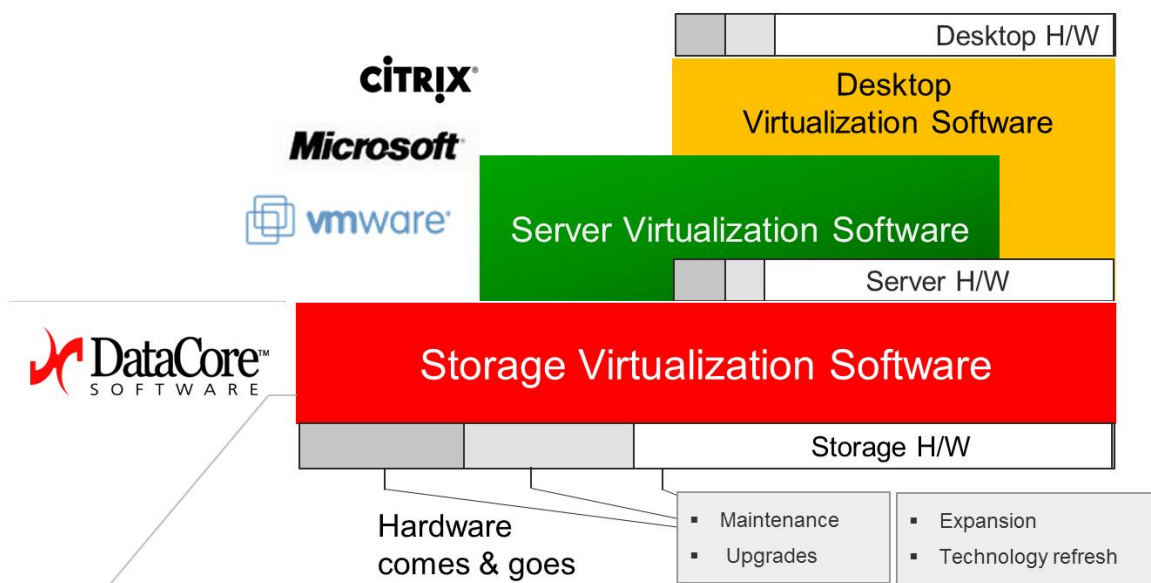
NOTE: Although a virtual environment is depicted above, the architecture can be constructed using virtual or physical machines in any combination.

SANsymphony™-V Storage Virtualization Software

Technology Overview



The 3 Dimensions of a Virtualization Strategy



- Smooth operations
- Consistent performance
- Stable suite of device-independent services

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Device-Independent Storage Virtualization Software, Core to Your IT Infrastructure

Over the past decade DataCore has developed sophisticated storage virtualization technologies to overcome device-specific differences and limitations so that you may experience non-stop, lightning-fast, waste-free SANs despite continuous changes in the makeup of your storage pool. Software transforms imperfect storage hardware devices into ideally behaved disks; i.e., “virtual disks” that have plenty of capacity, run fast, are easily shared, never age and are always accessible. This unique emulation overcomes differences, limitations and flaws inherent in all real devices, whether they are basic disk drives or top-of-the-line disk arrays.

The software harnesses the power of dedicated x86/x64 Windows servers to speed up disk response, execute replication, data protection, and other advanced functions, while generally managing the allocation of the virtual storage pool. The servers effectively turn into locked down, “storage virtualization nodes” and cease to be general purpose machines. They may be chosen from your preferred manufacturer and sized to your specific I/O requirements.

Infrastructure-wide features work across unlike and incompatible storage devices

SANsymphony-V software solves difficult storage-related challenges introduced by server and desktop virtualization, cloud computing, general expansion, business continuity, and disaster recovery initiatives. It forms an active, transparent virtualization layer across disk storage devices to maximize the availability, performance and utilization of data centers large and small.

The integrated set of centrally-managed data protection, provisioning, caching, replication and migration functions operates uniformly over different models and brands, assimilating current and future equipment non-disruptively. SANsymphony-V cost-effectively speeds up applications, delivers uninterrupted data access and extends the life of tiered storage investments.

Features at-a-Glance



TwinStrata CloudArray

The Industry's Most Flexible Software and Hardware Cloud Storage Appliances

Whether you are looking to expand data storage capacity, store and protect data offsite, or build a disaster recovery and business continuity strategy, CloudArray can extend your storage infrastructure in minutes, without the capital and operational expenses associated with traditional storage solutions. CloudArray®, TwinStrata's breakthrough Cloud storage appliance, is an enterprise-class data storage and data protection solution that enables organizations to instantly and securely expand their storage capacity using one or more cloud storage providers. CloudArray seamlessly integrates into existing on-premise storage environments and delivers cost-effective storage services optimized for performance, multi-site availability, and elastic unlimited storage.

Typical use cases for CloudArray include online remote storage for backups, archives, and other business data, including primary storage. CloudArray caches data locally to provide local performance. Flexible and easily configured dynamic caching policies allow different cache configurations for different volumes, based on application requirements.

The CloudArray appliance is available in two deployment models; as a virtual appliance supporting all the market-leading hypervisors (VMware ESX/ESXi, Citrix XenServer, Microsoft Hyper-V and Amazon EC2) and as a physical appliance for customers that prefer dedicated purpose-built hardware. Both software and hardware configurations offer high-availability options to meet the needs of enterprise environments.

Cloud Storage Volumes

CloudArray volumes are thin-provisioned and easily configured using one-button policies. Volumes are expandable to meet future increased capacity needs. Cloud storage is Storage as a Service and is delivered as a utility, pay-as-you-go model. You only pay for the storage you use.

CloudArray cache provides local performance for volume access and each volume is automatically replicated to Cloud storage for high availability. In the event of a disruption or outage, data can be easily accessed using a variety of methods, either on-site, offsite, or in the cloud.

CloudArray volumes can be individually configured, based on one-click policies, with cache selections ranging from partially cached to fully cached, depending on application needs. Cache is easy to resize as application needs change. Cache can consist of local disk, solid-state, network-attached or SAN storage. For applications requiring the highest performance, a fully cached copy can be kept locally with a replicated copy in the cloud.

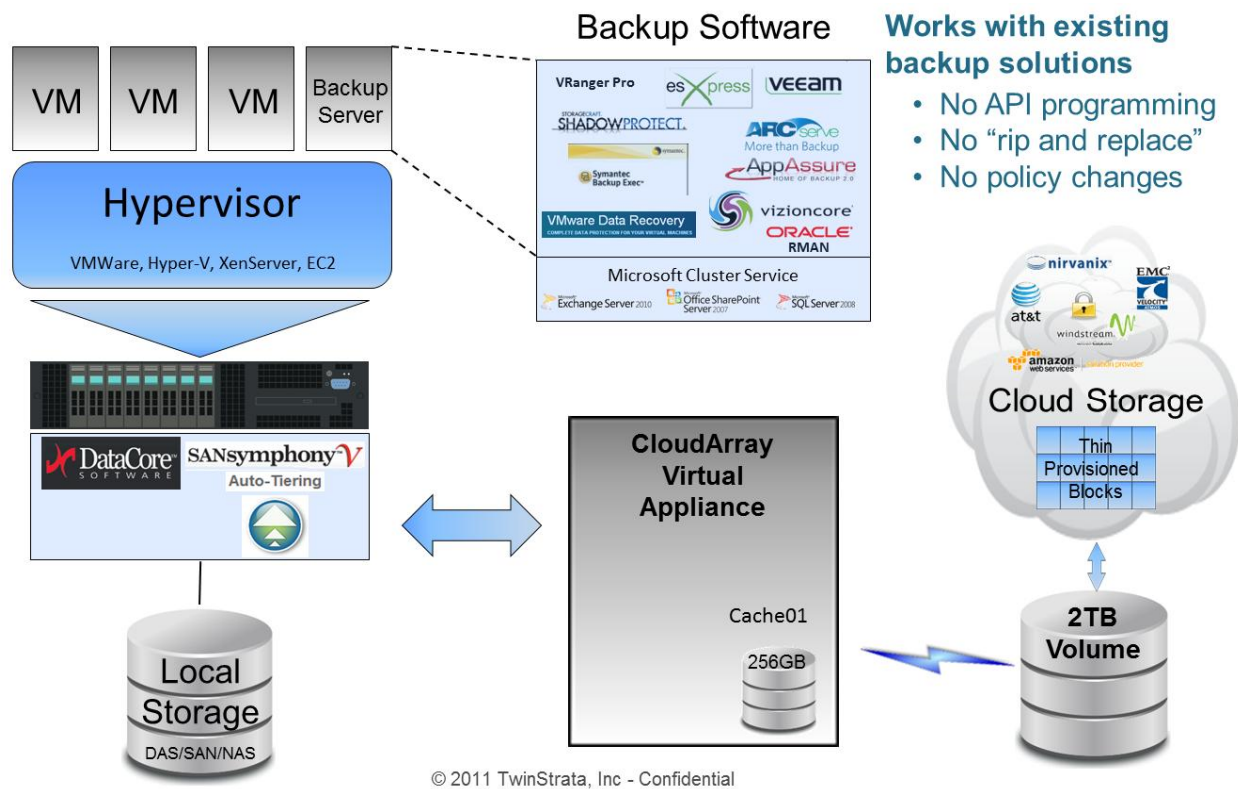
CloudArray provides in-cloud data snapshot services for point-in-time copies for rollback, test and development, data analytics and other applications. In-cloud snapshots are space, bandwidth and performance efficient.

Data Availability and Security

For increased data protection and high data availability, CloudArray offers data copy policies that replicate data across local storage and a variety of third party storage cloud providers. CloudArray also enables replication or migration of data volumes across cloud service providers. CloudArray optionally compresses, deduplicates and encrypts data blocks prior to transporting it to public cloud storage to ensure efficiency, data security and privacy. CloudArray leverages the Advanced Encryption Standard (AES) adopted by the U.S. government, also used to secure top secret information.

Implementation Details

Using CloudArray with SANsymphony-V for Offsite Backup to the Cloud

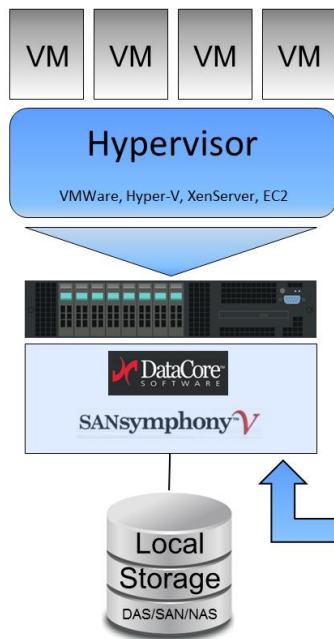
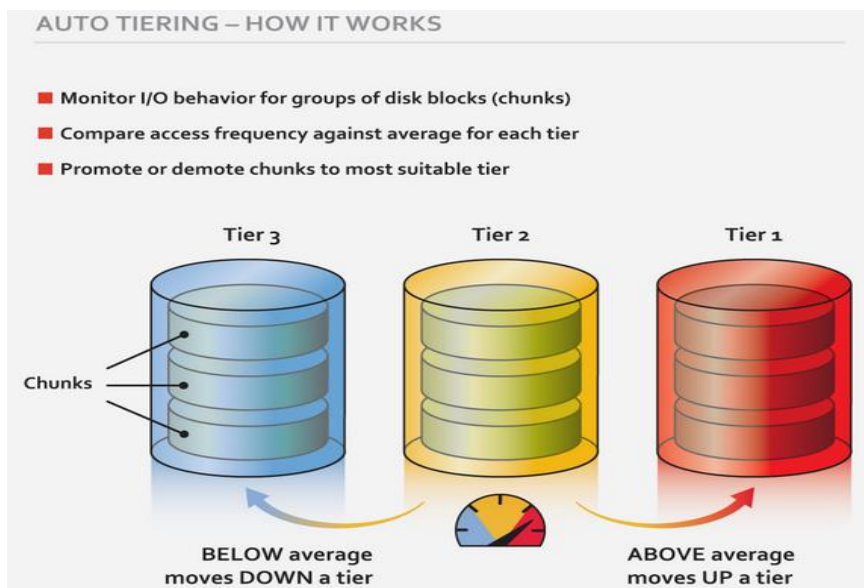


In the backup scenario, CloudArray is used in conjunction with the backup software. Depending on specific requirements it’s possible to keep a complete local copy of the backup data or a partial copy. Regardless of how much of the backup data is kept locally, a complete copy is kept offsite in the cloud. The offsite backup takes place automatically and allows seamless, secure storage of data typically in multiple offsite locations to ensure data availability and integrity. This solution works with your existing backup solution.

Using CloudArray to Integrate Cloud Storage into an Auto-Tiering Architecture

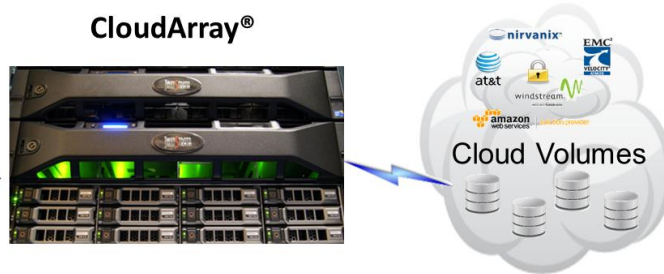
SANsymphony-V auto tiering optimizes across different models and brands of storage by dynamically choosing between fast /expensive disks (e.g., SSDs) and lower cost / higher capacity drives.

You simply select which disks make up each tier (e.g., high performance, mid-range, low cost). SANsymphony-V adapts to provide the most demanding workloads with speediest response and demotes infrequently accessed information to more cost-effective disks. Access frequency determines which disk blocks should be moved into which tier.



Advantages:

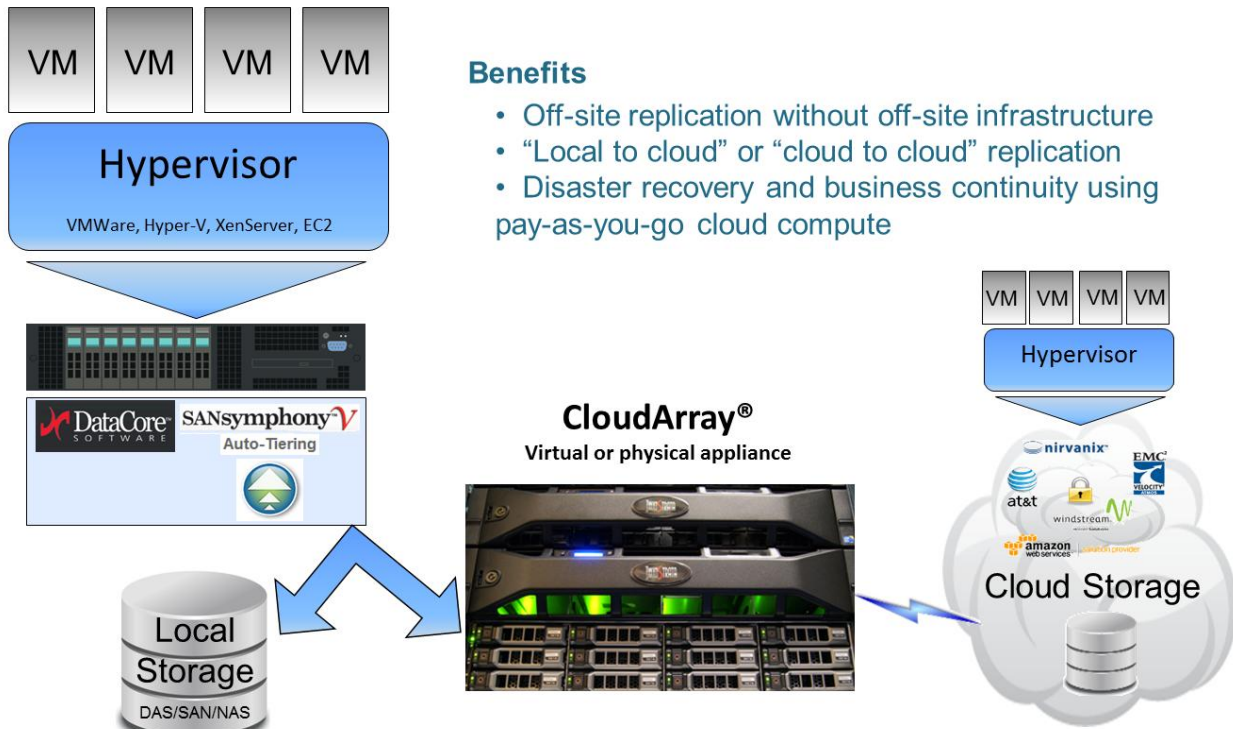
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CloudArray enhances DataCore auto tiering by adding a cloud storage tier, which brings utility Storage-as-a-Service capabilities from a wide range of cloud storage providers. Doing so, creates an inexpensive tier that scales limitlessly—perfect seldom-used data, such as archives and backups. CloudArray makes this easy by eliminating the need to learn cloud storage APIs and giving the ability to migrate from one cloud storage provider to another to avoid vendor lock in.

Using CloudArray with SANsymphony-V for Cloud-based Replication & Disaster Recovery



Benefits

- Off-site replication without off-site infrastructure
- “Local to cloud” or “cloud to cloud” replication
- Disaster recovery and business continuity using pay-as-you-go cloud compute

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TwinStrata CloudArray can facilitate an offsite replication environment using cloud storage as the offsite storage location. Nearly unlimited, secure, offsite storage for little or no capital expenditure provided in minutes with little or no local footprint.

Try CloudArray for Free

For more information about TwinStrata CloudArray, or to download a free copy of CloudArray, please visit www.twinstrata.com.