Datasheet

SANtricity Operating System and SANtricity Storage Manager

The purpose-built, enterprise-grade building block for enabling a fast, simple, reliable storage foundation

KEY BENEFITS

Performance-Optimized SANtricity Operating System
Accelerate performance for high-IOPS and low-latency applications as well as high-bandwidth and high-throughput applications—all out of the same enterprise-grade storage building block.

Field-Proven Reliability
Get best-in-class reliability with automated features, online configuration options, state-of-the-art RAID, proactive monitoring, and the NetApp® AutoSupport™ tool—all part of the NetApp SANtricity® operating system. With an installed base of nearly a million operating systems, SANtricity Storage Manager is a testament to the reliability of the NetApp E-Series product line.

Interface That Is Simple, Intuitive, Powerful
Leverage NetApp SANtricity Storage Manager's easy-to-use, intuitive interface to simplify storage management and gain flexibility for advanced tuning.

The Challenge

Your enterprise relies on core applications that are critical to your business success. To achieve business goals, you need consistent application performance and continuous availability. To deliver value and reduce complexity, you must have proven storage systems that work with your application software. Because your operations depend on these applications, they must have greater than 99.999% availability. For this you need a proven enterprise-grade storage building block.

The Solution

For cloud and big data applications and for traditional database, collaboration, and data protection applications, NetApp E-Series and EF-Series storage arrays with the SANtricity operating system and SANtricity Storage Manager offer industry-leading performance, reliability, and ease of use.

Intuitive GUI

Blending robust functionality and ease of use, SANtricity Storage Manager is well suited for full-time storage administrators who want complete control over their storage configuration. The software is also well suited for part-time system administrators who prefer an intuitive interface and wizards that are designed to simplify storage management.

Online Administration (No Scheduled Downtime)

With the SANtricity operating system, you can perform all of your management tasks while the storage remains online, with complete read and write data access. This capability enables your storage administrators to make configuration changes, perform maintenance, or expand storage capacity without disrupting I/O to attached hosts. These online capabilities include the following:

- Dynamic Disk Pools (DDP) greatly simplify traditional storage management with no idle spares to manage or reconfigure when drives are added or fail. This capability enables automatically configuring, expanding, and scaling storage.
- Dynamic capacity expansion and reduction for DDP enable you to add or remove up to 12 drives at a time for a pool. The pool dynamically rebalances to adjust for these drive count changes with no requirement for parity recalculation.
- Dynamic RAID-level migration changes the RAID level of a volume group on the existing drives without requiring the relocation of data. The migration operation supports RAID levels 0, 1, 3, 5, 6, and 10.
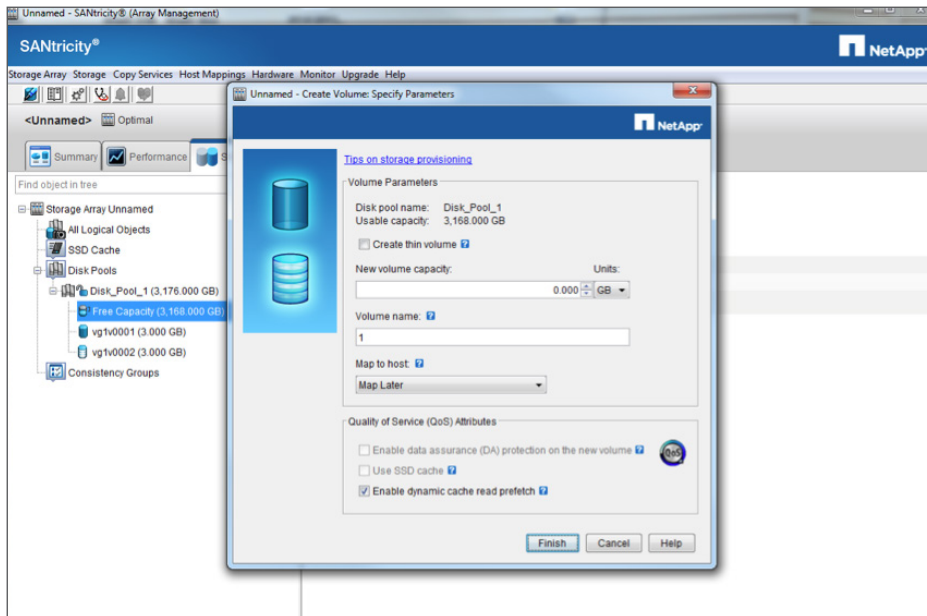
■ NetApp®

Figure 1) Simple volume creation.

- Dynamic physical and logical expansion enables administrators to add new drive modules, configure volume groups, and create volumes without disrupting access to existing data.
- Dynamic capacity expansion for volume groups allows the addition of up to two drives at a time to an existing volume group. This capability introduces free capacity for volume creation or expansion and improves the performance of the volumes that reside on that volume group.
- Dynamic volume expansion (DVE) enables administrators to expand the capacity of an existing volume by using the free capacity within the volume group or DDP. DVE redistributes or rebalances for maximum performance and utilization.
- Dynamic segment-size migration enables administrators to change the segment size of a given volume. This capability is critical when your new application release changes segment size.
- Nondisruptive controller firmware and drive firmware upgrades mean no scheduled downtime.
- The performance monitor provides graphical displays to fine-tune and optimize system performance.

Configuration Flexibility

Every environment is different, with varying priorities for performance, data availability, and capacity utilization. Performance-hungry environments often have drastically different workloads and performance demands. The SANtricity OS is flexible to best match your application needs, resulting in optimal performance, more efficient use, and lower storage costs.

Volume copy creates a complete physical copy (clone) of a volume in a storage system. The clone volume is a unique entity that can be assigned to any host. The volume can be used by applications that require a full point-in-time copy of production data (such as backup, application testing or development,

information analysis, or data mining) without affecting production volume performance. The clone volume can have completely different characteristics than the original volume, giving storage administrators maximum flexibility.

Storage partitioning can create up to 512 logical systems that support heterogeneous hosts from a single E-Series storage system, each with different characteristics to meet the exact storage needs of a server. This flexibility allows a range of hosts with different capacity, performance, and data protection demands to effectively share a single E-Series storage system.

High Availability

When data is trusted to a storage system, accessing and protecting that information 24/7 are crucial to your organization's future. The SANtricity operating system goes beyond the basic high-availability features to significantly improve data access, integrity, and protection. Its automated I/O path failover and extensive online configuration, reconfiguration, and maintenance capabilities mean that data is always available. With no scheduled downtime, SANtricity is designed for SAN operations in the real world, where applications must continue to deliver business value.

Data Protection

SANtricity operating system complete data protection technologies include such functionality as volume copy, snapshot and writable views, mirroring, replication, and Data Assurance (T10-PI) for data integrity. The technologies also include proactive monitoring, background repair, Full Disk Encryption, and Dynamic Disk Pools for increased flexibility and data protection versus that of traditional RAID.
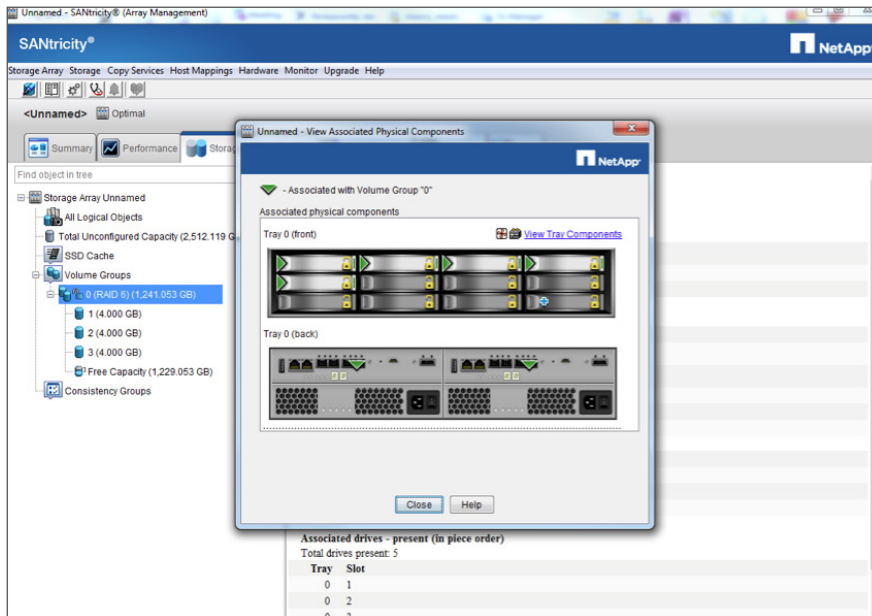
Figure 2) Physical hardware.

Remote mirroring protects information by continuously replicating (mirroring) local data to a remote storage system. For each set of volumes that make up a mirror pair, a variety of replication options optimize data protection and business application recovery needs. This robust functionality includes suspend and resume with delta resynchronization, mirror groups for multivolume consistency, and the capability to create a volume snapshot of the remote data while the mirror remains active. Additionally, support for cross-mirroring enables two separate systems to function as remote disaster recovery sites. The flexibility of FC- or IP-based remote mirroring support enables data protection for almost any environment.

NetApp Snapshot® copies create point-in-time images, or logical copies, of a storage volume. This functionality enables secondary servers to access a writable suspended version of the data for a variety of applications, including backup, file restoration, application testing or development, information analysis, and data mining.

For better reliability and availability, DDP significantly lowers data exposure during drive failure. It reconstructs data much faster, while protecting performance. Drive failures or additions become non-events.

Data Assurance provides data integrity checking from the controller level to the spindle. By conforming to the T10-PI standard, the E-Series provides this additional data confidence.

Full Disk Encryption services provide comprehensive security for data at rest without affecting storage system performance or ease of use. The native key management system saves the expense and complexity of an external key manager. Drive-based AES-256 encryption compliant with FIPS 140-2 level 2 using validated drives provides data security in case of drive theft, routine defective drive servicing, or repurposing of drives.

Streamlined Performance Efficiency

Intelligent cache tiering, which uses the SANtricity OS SSD Cache feature, enhances the response time of read-intensive applications. The SSD Cache provides intelligent caching capability to identify and host the most frequently accessed blocks of data and leverages the superior performance and lower latency of solid-state drives (SSDs). This caching approach works in real time and in a data-driven fashion, with no complicated policies to manage the triggering of data movement between tiers.

Efficient Storage Provisioning

Thin provisioning delivers significant savings by separating the internal allocation of storage from the external allocation reported to hosts. In essence, unallocated storage is shared across numerous volumes to drastically reduce the amount of total storage capacity because of overprovisioning for unknown usage.

AutoSupport

AutoSupport enhances customer service, speeds problem resolution, and helps prevent issues. AutoSupport automatically sends alerts based on either event-based or time-based (weekly, daily, other) criteria to provide faster and better customer service, keeping your systems up and running longer.

About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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