



ESVA Automated Storage Tiering

Highlights

- Meet wide array of service level requirements by deploying up to four different tiers
- SSDs are used most efficiently to optimize performance by up to 150% at no additional costs compared to a non-tiered configuration
- Achieve optimized performance at lower costs
- Data migration based on data usage patterns and user-configured policies ensures most efficient data distribution in storage pool
- Sub-volume tiering offers highly granular data movement
- Scheduling options ensure data migration can be conducted based on actual user requirements
- Reduced storage footprint and lower power consumption
- Simplified IT management through automated mechanisms

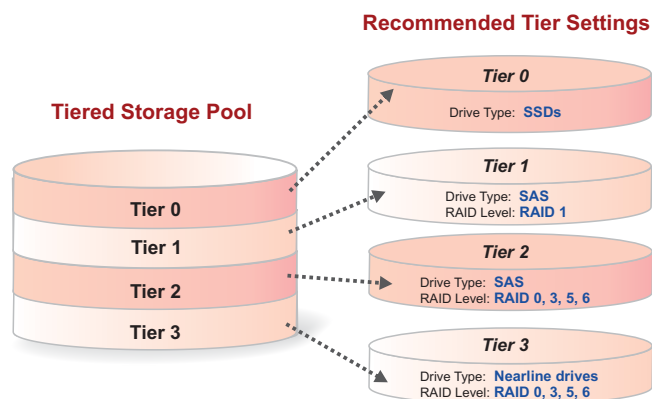
Automated Architecture Increases Storage Efficiency

Enterprises tend to use many different data storage resources to manage their data. However, assigning applications to different storage resources and migrating data when application requirements change can be a time-consuming process that lacks efficiency and drives up storage costs.

Enterprises therefore need a solution that enables them to use resources more efficiently and easily achieve different performance levels that can meet all service level requirements in the datacenter. By adding a significant degree of automation to resource allocation and data migration, ESVA automated storage tiering is an ideal solution to help meet these enterprise needs.

Enabling users to flexibly assign applications to tiers distinguished by different drive types and RAID levels, ESVA automated storage tiering provides an architecture that fully leverages the advantages of different storage media, including SSDs for high-performance data storage, and enables users to easily meet a wide array of service level requirements. In addition, users can greatly optimize storage performance and increase ROI.

Automated storage tiering on ESVA systems is block-based and implemented within the storage solution. A maximum of four tiers (tier 0 to tier 3) can be deployed, with the highest tier (tier 0) featuring the highest performance level.



Automated Storage Tiering Datasheet

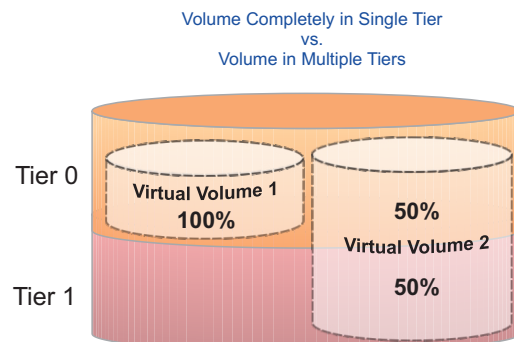
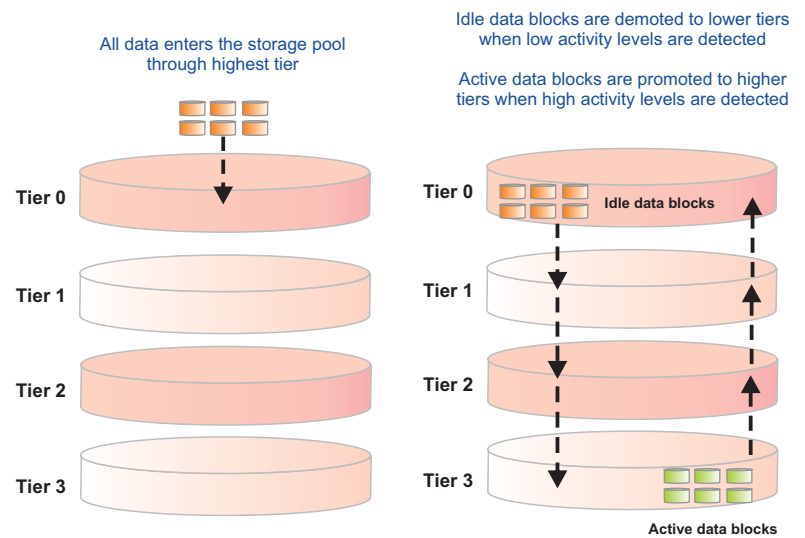
Automated Data Migration Ensures Most Efficient Distribution of Data

Automated data migration ensures data is dynamically stored based on actual usage without the need for complex, manually driven processes.

After entering a storage pool through the highest tier, data migrates between different tiers based on system-embedded algorithms that take into account the age of the data (how long has data been present within the storage system) and the frequency with which the data is used. This algorithm yields a status of data blocks, determining whether data blocks should be promoted (moved to a higher tier) or demoted (moved to a lower tier).

With sub-volume tiering on ESVA, a virtual volume (LUN) can simultaneously reside in multiple tiers to move data in a highly granular fashion. Ratios for different tiers can be set by the user or automatically configured by the system.

Data migration is manually triggered by the user, after which the system takes over and conducts migration based on the aforementioned algorithms. To make sure data migration is conducted based on user requirements, scheduling options are available.





Automated Storage Tiering Datasheet

Optimize Storage Performance and Enhance ROI

Automated storage tiering on ESVA helps users significantly optimize storage performance and increase ROI. Performance is optimized by efficiently integrating SSDs, which deliver performance levels far beyond what SAS or nearline drives are able to offer. Adopting SSDs in a tiered architecture enables users to meet the stringent demands of mission-critical applications in a cost-effective way.

When compared to a traditional ESVA configuration consisting of one RAID array and one expansion enclosure equipped with 600GB SAS drives, an ESVA configuration with automated storage tiering that consists of only one RAID array equipped with four 100GB SSDs and twelve 2TB nearline drives can offer a performance increase of 25% to 50% and a capacity increase of 5TB, while reducing costs by more than 15%.

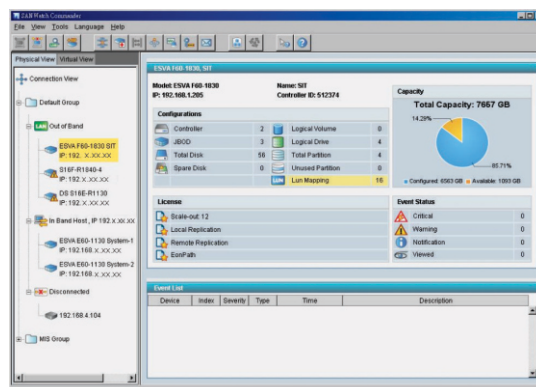
For users requiring maximized performance, an ESVA configuration with automated storage tiering that consists of one RAID array equipped with eight 100GB SSDs and eight 2TB nearline drives can offer a performance increase of up to 150% at the same storage capacity and cost when compared to a traditional ESVA configuration consisting of one RAID array and one expansion enclosure without automated storage tiering.

With storage resources utilized more efficiently, users can also reduce their storage footprint and lower power consumption. Power consumption is further reduced by the use of SSDs, as these drives consume relatively limited amounts of power.

Simplify Storage Management

Storage tiering simplifies and reduces management operations of storage systems. For traditional storage systems, IT administrators have to manually configure data migration operations and assign applications to specific storage media. With storage tiering, many of these operations are done automatically, simplifying processes, reducing time administrators have to spend on storage management, and lowering costs.

Automated storage tiering can be easily managed through ESVA's software management suite, SANWatch. Tiering configurations are fully integrated into SANWatch's user-friendly interface, enabling users to set up and maintain tiering operations quickly and efficiently.





Storage Tiers	
Maximum Number of Storage Tiers	4
Storage Tiers Based on Drive Type	Yes
Drive Support	SSD, SAS, nearline drives
Storage Tiers Based on RAID Level	Yes
RAID Level Support	RAID 0, 1, 3, 5, 6
Sub-Volume Tiering	Yes
Max. No. of Tiers in Which Volume Can Simultaneously Reside	4
Volume Tier Ratios	Defined by user or configured automatically
Data Placement and Migration	
Automated Data Migration	Yes, triggered by user
Data Migration Algorithm	Based on age of data and access frequency
Data Demotion (from higher tiers to lower tiers)	Yes
Data Promotion (from lower tiers to higher tiers)	Yes
Entry Point for All Incoming I/Os	Highest tier
Data Service Data Placement	Lowest tier
Scheduling Options for Data Migration	Yes; in-band agent required
Scalability	
Zero Downtime Capacity Expansion	Yes
Maximum Number of Disks in a Virtual Pool	1344
Maximum Number of Virtual Volumes in a Virtual Pool	1024
Maximum Size of a Virtual Pool	2PB
Maximum Size of a Virtual Volume	2PB
Minimum Size of a Virtual Volume	10GB
Availability	
Availability of Automated Storage Tiering	Via optional license
ESVA Model Availability	ESVA F70-2830, F60-2830, E60-2230, E60-2130
OS Support	Windows Server 2003, Windows Server 2008 (including Hyper-V), RedHat Enterprise Linux, SUSE Linux Enterprise, Sun Solaris, IBM AIX, HP-UX, Debian, CentOS, VMware, Citrix XenServer

24x7 Global Support: <http://support.infortrend.com/esva>



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