

Vmirror Appliance Series

Appliance-based High availability and Continuous Data Protection Solution for Xsan & Xserve RAID



The Vmirror Appliance is a purpose-built, solid-state, Fibre Channel system that routes and transparently mirrors Xserve RAID data using high-performance hardware mirroring. The Vmirror architecture scales upward in both performance and availability: Vmirror appliances come in single-engine (data engine) configurations for continuous data protection and in two-engine clusters that move data at a sustained, 350 megabytes per second.

Clustering also ensures you have access to your content in the event of storage outage: two internal data paths to your mirrored Xserve RAID video content means no single point of failure can cause downtime. In event of a storage system outage, the Vmirror appliance hardware-based mirroring instantly fails over to alternate storage without host.

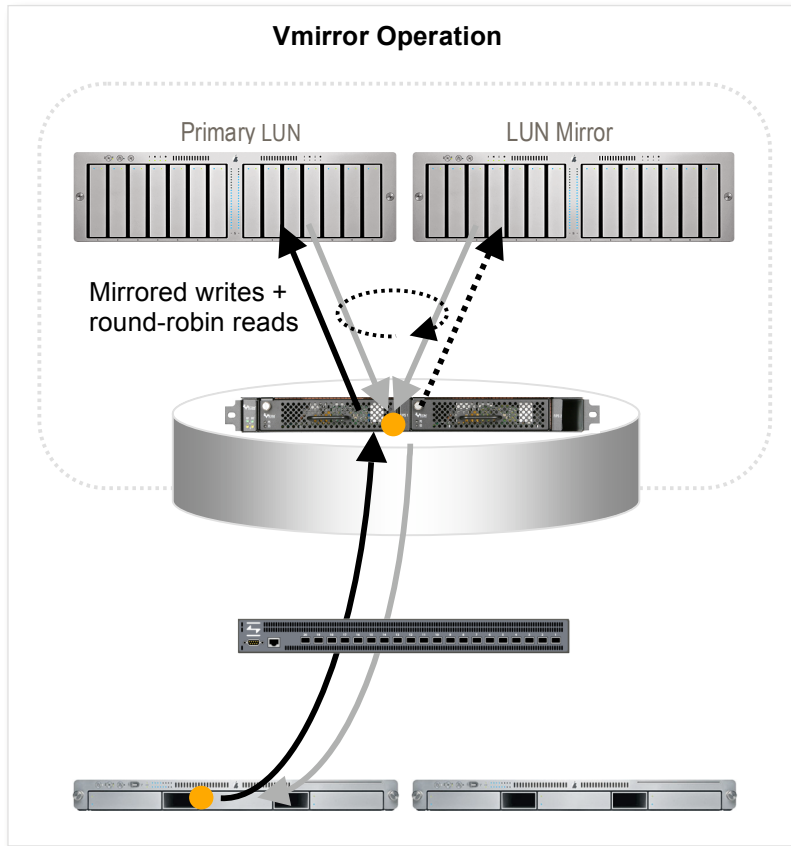
Performance and Scalability

Each Vmirror appliance engine is an independent system that attaches to the FC network, complete with its own real-time operating system and integrated hardware designed to move data at FC line speeds. The appliance has been built for easy scalability: a modular, clustering architecture enables performance and availability to be expanded in building-block fashion by simple addition of more engines. Depending on the application, Vmirror appliances support from 2-4 Xserve RAID systems.

Each Vmirror appliance provides continuous, mirrored protection of data by simultaneously writing to two Xserve RAID LUNs. All data written by the host systems is sent synchronously to the two logical units by the Vmirror appliance. Each LUN is an identical, block-for-block “twin”, meaning that in event one of the LUNs becomes unavailable, the Vmirror appliance can fail over to the alternate LUN without affecting Apple host system operation. Because the Vmirror appliance accomplishes this via high-speed, internal hardware routing, failover is both instantaneous and transparent to the host systems.

In addition to simplifying failover, the identical, mirrored LUNs are also used by Vmirror to accelerate the “read” performance of the Xserve RAID by alternately reading from both LUNs in round-robin fashion rather than only from a single

primary LUN. This is made possible by the twin LUNs, which to the host system are identical. For high-performance applications like video production, the ability to read from two identical LUNs offers major performance advantage over single-LUN reads, which can slow host access as large video files are read from a single LUN.

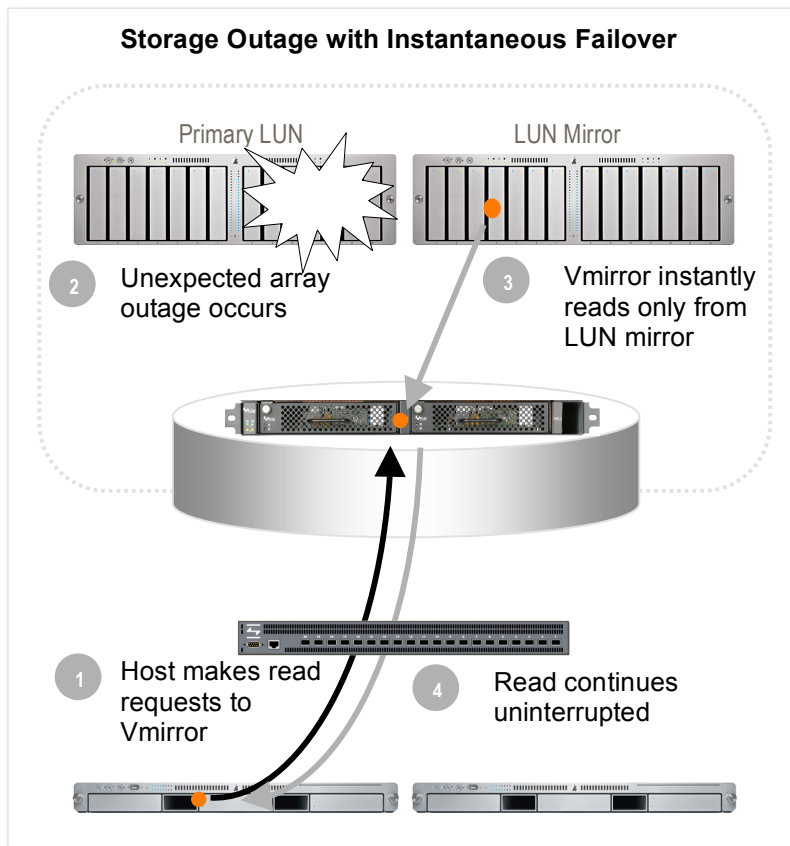


High Availability and Continuous Data Protection

Vmirror uses hardware mirroring between two Xserve RAID LUNs to replicate data and provide instantaneous access to the LUN mirror in the event that the primary LUN becomes unavailable. To the Apple host systems or Xsan metadata controllers, the Vmirror-protected LUNs appear as a single, logical storage unit. In effect, the Vmirror connected storage pair behaves as virtual, "unbreakable" LUN.

As viewed from the host system, a single or clustered Vmirror appliance appears as a single, active-active storage system, while from a physical standpoint, Vmirror-protected Xserve RAID arrays may actually reside in different physical locations — providing an additional degree of protection against disaster. As compared to a single-engine appliance, a Vmirror cluster doubles throughput, and adds a second data path and redundant components, thereby ensuring that no single point of failure can cause downtime.

In the unlikely event a storage unit fails, the Vmirror cluster shift from primary to mirrored storage is a simple matter of ceasing reads from the primary LUN and



instead, reading only from the mirrored LUN. Failover is thus instantaneous and storage outage is imperceptible to host operation.

High availability Made Easy

Vmirror appliances make mirroring installation and management a snap. Because mirroring is performed on the appliance rather than host computers, no installation of mirroring software or special drivers is required. Instead, installation is performed just once using Vmirror Admin, making installation as easy as a couple of mouse clicks. Once the mirrored arrays are activated, Vmirror-protected storage becomes immediately accessible to all PowerMac and Xserve G5 systems or Xsan metadata controllers (including defining permissions).

Vmirror appliances save you more than just installation labor. Less management is also needed because the Vmirror appliance shields host system operation from storage controller failures and the associated storage re-build process. In the event re-build is required, Vmirror continues to provide access to the mirrored storage until the process is completed. When the primary storage is fully restored, Vmirror shifts host access back to the original mirrored operation. All changes are automatic and fully transparent to connected hosts, and require no operator intervention.

Affordable Alternatives

Whether you choose a single-engine Vmirror appliance for continuous data protection or a clustered, two-engine appliance for high availability, Vmirror is priced to match the breakthrough value-pricing of Xserve RAID. The combination provides unbeatable storage system value compared to any enterprise storage solution offering equivalent high-availability and performance. For more information on Vmirror and other Vicom System solutions, please visit www.vicom.com.

Specifications

Models	Vmirror, VM-1. Single-engine appliance in 1U chassis Vmirror Cluster, VM-2. Two-engine cluster appliance in 1 U chassis
Fibre Connectivity	ANSI/IS Protocol/Topology Standards <i>ANSI Fibre Channel (FC-PH, FC-PH-2, FC-PH-3, FC-PLDA, FC-FLA)</i> <i>ANSI Fibre Channel Arbitrated Lp (FC-PLDA, FC-AL, FC-AL-2)</i> <i>ANSI Fibre Channel Fabric (FC-FLA, FC-GS-2)</i> Classes of Service: Class 3 Data Transfer Rate: 1 r 2 Gb/sec Part Type: N(L)_Prt <i>Dual 2Gb Fibre Channel ports (SFP):</i> <i>Port A designated for host/initiator connectivity</i> <i>Port B designated for storage/target and inter-module connectivity</i>
Serial Port Connectivity	Protocol: Serial Transmission Speed: 115200 baud Connector DB-9
Ethernet Port Connectivity	Protocol: TCP-IP Speed: 10base-T/100base-TX Connector RJ-45 Compatible Vmirror Admin management package, Telnet, FTP
Operating Environment	Operating voltage: 100 to 240 VAC; 50 to 60 Hz Power: 460W maximum continuous power Temperature: +5C to +40°C (41 to 104°F) Humidity: 8% t 80% (non-condensing)
Mechanical	Model VM-1, 24 pounds (10.91 kg) Model VM-2, 26 pounds (11.82 kg) 1U rack-optimized chassis <i>1.75 inches (4.445 cm) high</i> <i>17.0 inches (43.2 cm) wide</i> <i>27.25 inches (69.215 cm) deep</i> Redundant hot-swap power supplies with integrated cooling fans Integral power supply with Power Plus SSI connector Front-to-back air pattern
Safety Standards	UL 60950 IEC 60950 EN 60950
Emission Standards	FCC Part 15, Class A ICES-003 Class A VCCI Class A EN 55022 Class A

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