# Video Server Consolidation with SanDisk® SSDs

Video surveillance is now considered essential for physical security by diverse organizations. The success of this surveillance technology to date along with double-digit market growth mean that it will only be deployed in larger volumes in the future, resulting in the need for more cameras, better quality, and more primary storage capacity for video servers.

*"SanDisk flash storage offers a compelling alternative for consolidating video surveillance deployments with high-throughput and high-capacity primary storage."*

**Reinier Tuinzing,
Strategic Alliance Manager, Americas,
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Unfortunately, traditional video surveillance server technology based on hard disk drives (HDDs) is plagued by numerous challenges. Restricted by moving physical parts, limited throughput often results in a loss of critical video quality. Even with compression, HDD-based video servers often lack the ability to serve simultaneous reads and writes without dropping frames, impacting the ability to recover from failures or perform timely or accurate analytics. The shortcomings of HDD storage will only become more pronounced as cameras are deployed in larger numbers, and as those cameras are upgraded to high-definition (HD) or 4K resolutions.

Substituting SanDisk flash storage for primary storage can eliminate many of the shortcomings of traditional HDD-based video surveillance solutions. While flash has been used in cameras in the past, SanDisk has tested high-throughput flash technology as primary storage for video surveillance servers. Solid-state drives (SSDs) can provide both dramatically higher capacity and sustained throughput, with higher density and scalability for video servers. More cameras per server yield significant server consolidation and dramatic reductions in total cost of ownership (TCO) and operational expenses (OpEx).

## Consolidation for Lower TCO

While low HDD throughput and capacity tend to increase the number drives, controllers, and servers, SSDs have the opposite effect. Figure 1 illustrates a three-year 1500 camera TCO analysis based on SanDisk and Milestone Systems test results. HDD-based servers are compared with two SSD-based configurations with differing levels of consolidation and numbers of cameras per server. The dramatic cost advantages of video server consolidation in terms of both TCO and OpEx are easily visible.
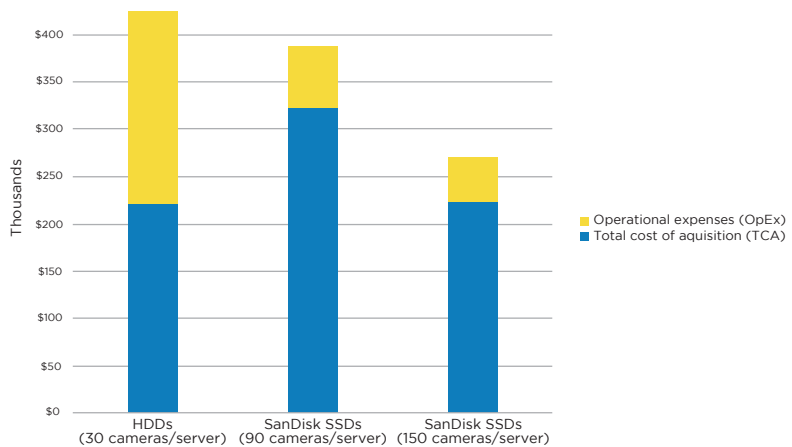


Figure 1. SanDisk SSDs offer dramatically better three-year TCO for 1500 cameras.

## Testing Milestone XProtect VMS

In addition to its general advantages, choosing the right flash storage is vital to a reliable high-performance video server solution. To that end, SanDisk completed Milestone Technology Partner Certification to evaluate flash storage for video surveillance in an industry-standard commercial off-the-shelf (COTS) server. The following products were tested.

- Lightning Eco™ Gen. II 1.6TB 12 Gbps SAS SSDs
- Milestone XProtect Corporate VMS software

Testing demonstrated that the chosen SanDisk SSDs provided up to five times the throughput and substantial improvements in capacity over 10K and 15K RPM HDDs typically employed in video servers. The resulting five-fold increase in the number of cameras supported results directly in dramatically fewer servers required to support a given number of cameras. Extensive testing with the Milestone XProtect video management system (VMS) has confirmed that consolidated sytsems using SanDisk SSDs can provide:

- Significantly lower TCO than an equivalent HDD-based system
- A fraction of the OpEx of an equivalent HDD-based system

These advantages are particularly important as the number and quality of video streams increase to meet growing security demands.

## Advantages of Flash for Primary Storage

SanDisk flash storage presents a unique opportunity to evolve and consolidate servers for video surveillance. Higher primary storage throughput and capacity results directly in the ability to deploy fewer, but more dense servers to support a given number of cameras. With rapidly evolving network technology and increasing available network bandwidth, video server clusters will be able to grow and scale more effectively, with higher bandwidth to individual servers aiding server consolidation efforts.

Flash storage promotes key advantages, including:

- *Truly scalable video server infrastructure* with linear density and throughput scaling for video surveillance
- *Reliable and resilient media* that is not subject to the wear and tear of rotating platters and moving heads
- *Better and more immediate intelligence* with throughput headroom that allows recording and analytics to simultaneously coexist on primary storage
- *A compelling cost model* with flash technology that rides the semiconductor evolutionary curve without the shortcomings of HDDs

SSDs save time and money, because they reduce latency, while improving quality of service (QoS). With no moving parts, SSDs don't experience failures due to mechanical parts wearing out as is common in video server applications. The high throughput of SSDs also means that RAID rebuild times are considerably shorter, reducing the chance of dropped frames. Moreover, with fewer drives, RAID controllers and systems required, power and cooling costs are lower than for HDD-based server solutions. SSDs are also lighter than HDDs, and generate no noise and substantially less heat.

## Summary

HDD-based video servers are now seriously limiting the scalability and potential of video surveillance, causing risks for both security companies, and those they serve. Utilizing flash storage as primary storage represents a new way forward with profound implications for quality, throughput, and cost. SSDs can provide fully five times the throughput of HDDs, with linear density and throughput scaling—resulting up to a five-to-one consolidation of required video servers. These throughput advantages coupled with growing capacities make SanDisk flash storage a compelling alternative to spinning media for demanding video surveillance applications.

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