

Hard drive requirements for video surveillance



The video surveillance market is booming. Whether in retail, on public transport, the perimeters of company buildings or in public places – surveillance cameras are now taken for granted in many places. However, with the growing number of cameras and the higher resolution video streams, the demands on the storage solutions used are increasing. Hard drive manufacturers, as a result, offer special HDDs for video surveillance. Toshiba Electronics Europe explains what sets these drives apart:

Long service life

In video surveillance systems, HDDs usually run around the clock. Surveillance HDDs are hence designed for 24/7 operation and typically have an MTTF (Mean Time To Failure) of one million operating hours. This corresponds to an AFR (Annualised Failure Rate) of 0.88%. For example, in an installation with 1000 drives, statistically about nine drives would fail per year. Desktop HDDs, on the other hand, which were built for runtimes between 8 and 16 hours per day, usually only achieve an MTTF of 600,000 hours. In continuous operation, this equals an AFR of 1.46% and about 15 failures per year for 1000 drives.

High resilience

Video surveillance produces large amounts of data that hard drives must store continuously, which puts a strain on the mechanical components. Surveillance HDDs are, therefore, highly robust and can handle an annual workload of up to 180TB. Desktop HDDs, which have fewer accesses and handle smaller amounts of data, are typically rated for only 55 TB per year. When used in a video surveillance system, this amount of data would be reached quickly, and the probability of errors and failure would increase rapidly.

High performance

Hard drives in the video surveillance sector often have to process several high-resolution video streams in parallel. Surveillance HDDs, therefore, include optimised firmware and larger buffer memories than desktop HDDs, which ensure that all data is stored reliably and without errors - even with up to 64 HD streams. Simultaneous read access is no problem, and the recorded video material can also be read out and checked. However, if special AI evaluations are to be used, which in addition to the high write loads also cause high read loads, the use of even more powerful enterprise HDDs is worthwhile.

Temperature resistance

Video surveillance systems are not always located in air-conditioned data centres or well-ventilated offices. As a result, surveillance HDDs are designed for a wider temperature range than desktop HDDs, so their components do not wear out as quickly. Typically, they can handle operating temperatures between 0 and 70°C, while desktop HDDs are usually designed for a range between 0 and 60°C, which is the range found in air-conditioned rooms and server rooms.

Compatibility

HDD manufacturers subject their surveillance HDDs to extensive compatibility and function tests in a wide variety of video recorders. This ensures that the drives work perfectly with the devices. If you want to be accurate, take a look at the manufacturers' compatibility lists or rely on complete solutions where experienced integrators have already equipped the systems with suitable hard drives. Desktop HDDs do not pass such tests in surveillance systems - so there is no guarantee that they will work smoothly in the devices or offer optimum performance.

Vibration protection

In systems that need to provide a large amount of storage capacity, there are a large number of HDDs whose rotational vibrations can mutually amplify each other. High-capacity surveillance HDDs are therefore often equipped with special sensors that detect these vibrations. Smart control mechanisms adjust the operating parameters so that the effect is minimised, and the drive performance is not impaired. Desktop HDDs lack these sensors and control mechanisms.

“Companies should equip their NVRs and DVRs with surveillance HDDs that have been designed to meet the demanding requirements of video surveillance”, explains André Grabon, Senior Specialist B2B Sales in the Storage Products Division of Toshiba Electronics Europe. “Desktop HDDs may be less costly, but they are neither able to cope with continuous operation nor the high workloads. Companies who buy the cheapest product may find that they have a higher risk of failure and overall, higher maintenance and repair costs.”



André Grabon, Senior Specialist B2B Sales, Storage Products at Toshiba Electronics Europe

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