Edge storage

Flexible and reliable recording solutions

AXIS
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1 Summary

Edge storage offers an affordable edge recording solution wherever network bandwidth is limited or absent. High-quality images are stored directly on a memory card in the camera or on a network-attached storage (NAS) device.

Edge storage increases system reliability by ensuring continuous recording and complete archives of video evidence in case of network or server failures, so called failover recording.

It is also used in onboard installations, such as on trains and buses, where there is no network.

Edge storage also enables high-quality local recordings to complement low-quality streaming in low-bandwidth environments, such as mobile networks.

For edge storage in surveillance use cases, it is recommended to use surveillance cards, which are SD cards specially developed to match the typical memory-writing behavior of a surveillance camera.

Installations that use surveillance cards from Axis require less maintenance because the cards last longer than standard SD cards. While they may entail a higher initial cost, surveillance cards help provide a cost-efficient recording solution with superior wear resistance and longevity.

2 Introduction

Storing data *on the edge* means storing it in the data-producing device itself (usually on an SD card in the device) or in another network device. These devices are considered to be *on the edge* of the network, as opposed to a *central* storage server. Edge storage is sometimes referred to as local storage.

In video surveillance, edge storage enables video recordings directly to an SD card in the camera or encoder, or to a network-attached storage (NAS) device.

This white paper presents why and how edge storage is used. The paper also discusses surveillance cards, that is, SD cards optimized for video surveillance.

3 Benefits of edge storage

Edge storage is useful on sites where network coverage is intermittent, limited, or absent. But it also has a place in mission-critical installations, such as airport or mass transit hubs. In such installations, edge storage in cameras that cover entrances and exits could be a critical part of a strategic backup plan.

3.1 Recording redundancy

Edge storage works as a complement to central storage. It can record video locally whenever the central system is not available or continuously record video in parallel with the VMS (video management software).

Edge storage enables failover recording, which means that images can be temporarily stored on the SD card on board the camera during network disruptions or system maintenance. When the network connection has been restored and the system returns to normal operation, the central VMS can automatically retrieve missing video clips from the camera and seamlessly merge them with video recordings. This way, the user gets uninterrupted video recordings even if the network connection is down. System reliability is increased, and system operation safeguarded.
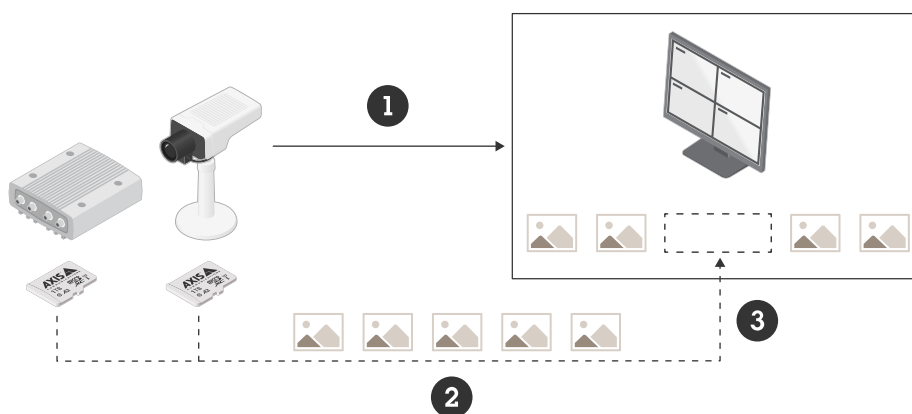
Failover recording
1   *During normal operation, the camera transmits video to the VMS for storage.*
2   *In case of network failure, video clips are temporarily stored on the SD card in the camera.*
3   *When the network is up again, the VMS retrieves the missing video clips and merges them with the recording.*

Edge storage for redundancy is compatible with most NAS products and Axis video products.

3.2 Low-bandwidth environments

Edge storage improves video analysis for systems with low network bandwidth where video cannot be streamed with the highest quality. This is typically in situations where you would use a mobile viewing app, but also in large-scale systems such as city surveillance.

By combining low-bandwidth monitoring with high-quality local recordings, you can optimize bandwidth usage but still retrieve high-quality video from incidents for detailed identification of objects and individuals.

If the camera employs Axis Zipstream technology, bandwidth and storage requirements are lowered while all the relevant forensic information is preserved.

3.3 Remote installations and onboard surveillance

Edge storage enables high-quality video recordings in remote locations and installations where network availability is fluctuating or missing entirely. In onboard installations, such as on a train, edge storage can record video when the vehicle is in operation. The recording can then easily be transferred to the central system when the vehicle stops at a depot.

A camera with edge storage in an onboard installation.

4 Edge storage with surveillance cards

Edge storage is mainly realized through the use of SD cards (including SD/SDHC/SDXC). These are flash memory units designed to provide high-capacity memory to portable devices, such as video cameras and smartphones.

Axis offers *surveillance cards*, that is, SD cards that are specially developed for optimal performance in video surveillance. They are industrial grade cards and thus resilient to the impact of extreme temperatures and environments. They also have improved endurance to match the typical writing behavior of a surveillance camera. This means that they can be written and overwritten many more times than ordinary SD cards can. Thus, the same card can remain in the camera for a longer time without wearing out.

With surveillance cards, video is recorded in a way that makes optimal use of each memory block. This not only saves memory but also keeps the number of write/erase cycles down, effectively increasing the lifespan of the card.

Using surveillance cards from Axis requires less maintenance than using standard SD cards because surveillance cards last longer. Their higher purchasing cost is balanced by the fact that they provide a cost-efficient recording solution with superior wear resistance and longevity.

5 Video management software

When integrated with VMS (video management software), edge storage helps create more robust and flexible video surveillance systems for mission-critical installations, remote locations, or mobile situations. Edge storage is supported by AXIS Camera Station and by VMS from leading Axis technology integration partners (TIP), including Genetec and Milestone.

About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, intercom and audio systems. Axis has more than 3,800 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

For more information about Axis, please visit our website *axis.com*.

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